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ART. I.—1. *Letters of Mary Queen of Scots, and Documents connected with her Personal History, now first published. With an Introduction.* By AGNES STRICKLAND, author of the Lives of the Queens of England. 3 vols. 1842-3. London.

2. *Memoirs of Mary Stuart Queen of Scotland.* By L. STANHOPE F. BUCKINGHAM. 2 vols. London, 1844.

3. *Letters of Mary Stuart, Queen of Scotland, selected from the "Recueil des Lettres de Marie Stuart," together with the Chronological Summary of events during the reign of the Queen of Scotland.* By PRINCE ALEXANDER LABANOFF. *Translated, with Notes and an Introduction.* By WILLIAM TURNBULL, Esq., Advocate, F.S.A., Scot. London, 1845.

4. *History of Scotland.* By PATRICK FRASER TYTLER, Esq. 9 vols. Edinburgh, 1839-1843.

THE numerous volumes that are almost daily spawned, relative to the days of Mary Stuart, proclaim the undying interest of the world, in one of the most extraordinary portions of its history. Old and young, male and female, foreigner and native, the didactic historian, the writer of memoirs, the collector of letters, and the general "gatherer of other men's stuff," have poured forth their sense or nonsense upon the prolific theme. Each too has some peculiar merit; each professes to give the correct story; each has made some grand discovery hitherto overlooked, or struck out some philosophical views, around which the sluggish imaginations of his predecessors had toiled in vain. Mr. L. Stanhope F. Buckingham gives "a personal memoir of the Scottish Queen, embracing, what none had done before, the essence of that long and vehement controversy;" and he "combines together, for the first time, the personal incidents of Mary's remarkable and romantic career." To set opposite to such high recommendations, Miss Strickland appears laden with "correspondence new to the public; and that which is not absolutely so, is now for the first time presented in a collective form, and

in language comprehensible by the general reader." Her volumes contain, too, "other letters and contemporary records of equal interest, many of them hitherto inedited, and for the most part translated for the first time." Mr. Turnbull partly admits, and partly denies this; Miss Strickland's book contains, according to him, many omissions, and is wretchedly translated; his own being the genuine article. Mr. Tytler again, has traced the history "with greater detail than former writers," seeing that "he had access to a large mass of manuscript materials, of which the greater part has been hitherto unprinted and unexamined;" and he has thus been "enabled to throw more light upon this division of the work, and to recover from the waste of conjecture and obscurity, some portions of Scottish history which were lost."

"The work," says Dr. Johnson, "is performed, first by railing at the stupidity, negligence, ignorance, and asinine tastelessness of the former editors, showing from all that goes before, and all that follows, the inelegance and absurdity of the former reading; then by proposing something, which to superficial readers would seem specious, but which the editor rejects with indignation; then by producing the true reading, with a long paraphrase, and concluding with loud acclamations on the discovery, and a sober wish for the advancement and prosperity of genuine criticism." Amid this eternal war, we have had dissertations recommended neither by their interest nor their moral utility, though truth has sometimes been struck out from the collision of discordant opinion. It is difficult indeed to write the history, or to read it, without sliding into the spirit of partizanship. When one seeks to preserve the cool impartiality of literary judges, and to treat the story with the indifference of stoical impartiality, an under-current of feeling rises to the surface of our thoughts, on which all our philosophy floats away. It is in vain that we recall the great interests that were involved, or the mighty convulsions of those old days, which centuries only laid at rest. Other influences put to flight sobriety of thought; imagination renders the past contest of party, a struggle of the present; and the reason is checked in its duty of censure or of praise.

The forty-five years from the Reformation in 1560, to the union of the crowns in 1605, is crowded with incidents for the politician, who wishes facts for any theory, or for the moral philosopher who wants examples to illustrate his general specula tions on the virtues and infirmities of humanity. For men of softer natures, there will not be found a page of history, so calculated to rouse the contending emotions of admiration and astonishment, or to wound sensibility by horror and indignation. They have a subject inexhaustible in extraordinary revolutions in opinion, and terrible reverses in fortune, when the worn-out prejudices of the middle age slipped from life to history, and

families who had flourished through ages of prosperity, were pushed aside, and were heard of no more. It is a noble theme for a historian who can estimate its spirit. It affords him scope for his highest powers of graphic narrative, or his profoundest reach of philosophical reflection. All the wonders are here that imagination would have created, had it left itself untrammelled to create a story in the precincts of times, of the events of which there is no record. Everything to excite attention by pleasing variety, to instruct the mind not by speculation but by example, and to meliorate the heart by a story which will never fail to find sympathies there.

Unhappy Mary! over whose sad story of unequalled misery no philosophy can prevent the tears of sensibility to flow, and no difference of creed can stifle the compassion of humanity at fallen greatness. What a long Iliad of woes was that life, chequered with self-implanted miseries—a life which blazed with so much lustre at its opening, and went down amid such clouds of sorrow. The scene of rapid change passes before us with a speed that hides the connexion between each Act of a drama, where princes were the players, and the spectators the world. The proclaimed queen of three great nations was, in a few little years, driven from her home in the noon-day of her youth and beauty, with cries of vengeance echoing in her ears, and a long captivity and ignominious death awaiting her at last. The coldest nature, and the most cynic philosophy, will admit that there is something touching in the story of a girl who had the warm affections of a kind heart, and all that we ever associate with human loveliness; whose errors were the result of no native depravity, but which met with so speedy and dreadful a reckoning.

History and tradition, and impressions which are transmitted from age to age by a medium imperceptible to analysis, have, in one mode or another, done their best to satiate human curiosity. We can follow Mary, step by step, from the first outburst of admiration of the cavaliers of France,

> "In life's morning march when her spirit was young,"

to her melancholy end. We know her life as thoroughly as we can ever know the past; her story sinks into the mind and nestles there like some of the nursery tales of early childhood, that come rising up from their long hiding place, when, amid the rugged scenes of life, the chord is struck that sends us back upon reminiscences.

We read the strange history again and again, and as each stirring incident appears, one can scarce imagine himself engaged in the study of things that once agitated human hearts, and had been productive of real destinies. Genius has contrived to weave out of it a tale; but how tame has even Schiller made

the copy, and how vapid is Scott's narrative beside the truth! Her own letters tell her history, with a dreadful sincerity and mournful pathos, that has never been surpassed by the best passages of the masters who have portrayed the workings of a wounded and distempered heart. Not so, however, with our manufacturers of memoirs, biographies, and dissertations. The endeavour with them has been, not to expiscate the truth. That would have been an idle and a useless task. Theory here makes sad ravage with history, under the guidance of a logic which stalks to its conclusions with an irresistible contempt of facts. The ordinary sources of past history are too narrow for their warm and enthusiastic imaginations. We are now to deal with writers who fly *extra flammantia mœnia mundi*, into the regions of conjecture. Laden with the stores acquired by imagination in its travels, they are positive and decided even on unattainable knowledge, and can develop at once the glories that are fallen, and invest with a superior pomp the beings they exalt, or correspondingly depress the villains, conspirators, and fanatical desperados they condemn.

It is not one point that these writers and their predecessors have involved in doubt. They compel controversy to attend Mary from her cradle to her grave, and render her story one of those unhappy subjects that can only be looked at from the extremes of human feeling. We scarce leave with moistened eyes the tale of suffering unmerited, and the good points of character exaggerated to falsehood, when our hearts are turned to stone at the narrative of crime unpunished, humanity trampled on, and the decencies of life outraged and despised, in the wild gratification of flagitious passion.

The Letters of Queen Mary, with which Miss Strickland has favoured us, are a selection from several tomes, put together by the industry of Alexander Labanoff, a Russian prince. Those that are new are of no great importance. Aware of this, Miss Strickland has interweaved with them a number of the interesting letters long ago published by Robertson and Keith, and has endeavoured to render her story connected by a short abridgment of Mary's history. To the whole she has prefixed a long introduction, and added many pages of appendix, and, by writing several times of her intentions in regard to "future editions," she indicates her opinion, that her own high estimate of her labours will only be in unison with that of the public.

The public are sometimes blind, and often capricious; but, in the present instance, we are afraid that such sanguine anticipations will be disappointed. We would wish to speak with all gentleness of a lady, and to pass over in silence, if we could not approve, the productions of her genius. But Miss Strickland's is

a special case. She is a practised authoress, who favours the public, as each revolving lustrum passes, with thick volumes of history, which have a certain circulation, and necessarily exercise a little influence. She is, moreover, not unaccustomed to criticism; and in the present case, by her assumption of excellence, and by the tone and temper in which she writes, she has resigned the privileges which we would otherwise be the first willingly to concede.

Speaking of the accusers of the Queen, Miss Strickland has well observed, that "they would have been wonderfully improved by the castigation of our present periodical press,"—(vol. iii., p. 255,)—an observation which we cite here with the view of justifying ourselves in giving a few specimens of her capacity for historical investigation, and in assisting her in the labour of revisal for those numerous editions that will be called for by an anxious public. Some of the points we have noticed, in the cursory glance we have given to her volumes, may be considered unimportant; but in a work destined to such a wide popularity, it is best to be correct in regard to every particular.

We are informed very early, that "the divorce of Bothwell from Jane Gordon, sister of the Earl of Huntly, was declared at the same time in the Consistory and the Archiepiscopal Court," (vol. i., p. 33.) Both were Consistory Courts; and Miss Strickland means to say, that the divorce was carried through in the Consistory Court of the Archbishop, and in the Consistory Court of the Commissaries. In the next page, she writes of something having been done "in presence of the Lords of Sessions," (p. 34.) A strange use is made of Parliament in another place, for "the Queen convokes a Parliament in order to bring to trial" the murderers of the King, (p. 28.) Rizzio's murder took place "in the drawing-room of the Queen at the *Castle* of Edinburgh," (vol. i., p. 226.) Mary, on her arrival from France, "disembarks at Leith, having escaped the vessels of Queen Elizabeth, which, however, took one of her galleys. Having made a short stay at the *Abbey of Lislebourg*, she proceeds to Edinburgh," (vol. i., p. 7.) Lislebourg was the French name for Edinburgh, as it was then surrounded by so many lochs. The Queen, therefore, first "makes a short stay at" Edinburgh, and then proceeds to Edinburgh! "Mary appoints James *Murray* (her natural brother,) and Maitland, her prime ministers," (vol. i., p. 7.) This, we presume, is James *Stuart, Earl* of Murray. After the battle of Carberry Hill, "the tyrants took her (the Queen) to the Kirk-at-field, and shut her up in the house where her husband's corpse had been carried, after his murder, and had laid till his burial," (vol. iii., p. 28.) The Queen was first taken to the Provost's house, and then carried to Holyrood Palace—(Tytler, vol. vii., p. 112,)—which evidently affords no room for heroics

against the tyrants. "Lady Douglas" (at Lochleven,) "treated the captive Queen with the utmost indignity, telling her she was but a mock Queen, and that she had usurped the Crown from the Earl of Murray, who, she said, was in reality the right heir, boasting that she was the lawful wife of James the Fifth."—(Vol. iii., p. 29.) There is not a word of this in history. Bothwell, it appears, "was turned of fifty, coarse and ugly."—(Vol. iii., p. 124.) It is one of the points long ago incontestably settled in this controversy, that Bothwell was not thirty when he married Mary.—(Hailes, vol. iii., p. 80, ed. 1819.) What is meant in another place by "later documentary histories of the *minutes* of the Scottish Parliament and English Privy Council," we have been totally at a loss to comprehend.—(Vol. iii., p. 273.) How a history can be other than documentary, no dictionary will explain; and where such a history, or any other history of the *minutes* of the Parliament or Council exists, we humbly hope Miss Strickland will inform us.

These specimens will display the character of Miss Strickland's labours in the thorny field of Scottish history. We have confined ourselves to a few improvements of her own; but with regard to those of other people, she certainly shows that there is no opinion, however incredible or absurd, that, having had a parent, will die for want of a nurse. When she leaves narrative for philosophy or speculation, we have the Reformer denominated, with fluent flippancy, as "Master John;" and the whole population of Scotland dismissed with contemptuous epithets we need not cite. To dwell longer upon such an effusion, would be to honour it beyond its worth; and we have only noticed it, from the circumstance, that the lady has "in preparation, a personal memoir of Mary Queen of Scots, which in due time will be forthcoming."—(Vol iii., p. 1, *Preface.*) We implore Miss Strickland to remember, in the rapid concoction of her "histories," that the patience of the public is not illimitable, and that her unhappy reviewers would wish, if possible, to be the first to herald the praises she expects; but that, if unmindful of the fact, that bad books—bad in style, erroneous in facts, flippant and superficial—are public nuisances, she will learn from the exposure to which they are doomed, that there will be no "future editions," to writers who have only half intelligence on subjects on which they publish volumes, joined to the vanity of knowing everything without study, and deciding on everything without information.

But the work of Miss Strickland is one entire and perfect chrysolite, in comparison with the "Memoirs of Mary Stuart, Queen of Scotland, by L. Stanhope F. Buckingham," who, we presume, is of the masculine gender, as he often quotes Latin,

and is once learned in Greek. This gentleman's performance is no dry marrowless anatomy. From the beginning to the end of his story, his tears never cease to fall. He is in a continual state of thaw and dissolution; and while the one hand was tracing the sorrows of his heroine, the other was busily engaged with a cambric handkerchief. The author intends to overwhelm us with sentiment and with eloquence; and figures arrayed in most fantastic drapery dance in his volumes, in the finest style of metaphorical confusion. The heavens are rent with the thunders of Jove; Neptune raises commotions in the deep, and Pluto in ecstasy leaps from his throne. Aeronautic flights are taken into the cloudy regions of sentiment, amid the mists of which we have often found ourselves hopelessly lost. The Minerva press never issued a work which, in its sympathies, has a more diffusive benevolence. Not Mary's sorrows alone lacerate the author's heart; but every thing, animate and inaminate, that belonged to her—her letters, her chairs, her poodle, are canonized! Matters of fact are tortured with a kind of juvenile ingenuity, and the remark of Addison nearly holds true, as to this as well the other productions of the same school, that "it is impossible to carry on a modern controversy without the words scribbler, liar, rogue, rascal, knave, and villain." There is, in truth, nothing so inexpressibly tiresome, as to travel through the mouthing passages, winding out in immeasurable longitude to nothing. "Treading the crude consistence half on foot, half flying," we rise from it with the same sensation of utter weariness, and the same dreamy idea of Mary's history, and of the doings of the villains who beset her, as one would have if, under the influence of nightmare, the whole had been exhibited in the misty phantasmagoria of a dream. We give one sentence as to the swamping of a boat belonging to Queen Mary, as a specimen of the author's admirable style:—

"Scarcely had she set foot on board the vessel, which was to convey her away—hardly had the oars of the galley-slaves kissed the cresting waves, when a vessel, mistaking the current, foundered in her sight, and most of the mariners, after a vain struggle, were drowned in the angry flood."—(Vol. i., p. 50.)

The rest of the work is equally eloquent and beautiful; and if its merits were thoroughly understood, it would become universally admired by—boarding-school girls.

Of Mr. Turnbull's performance, our space prevents us from speaking in detail. We understand that he is a Scottish lawyer, and hence, perhaps, the more intimate knowledge he possesses of the subject on which he writes. If we meet with little maudlin sentiment in his pages, we are treated often enough to strong expressions. He appears to hold somewhat of the philosophy "that

a terrible oath, with a swaggering accent, sharply twanged off, gives manhood more approbation than ever proof itself would have earned him," and hence the nonsense as to "the satanic malice" of the Queen's enemies. Mr. Turnbull's pages show that he did not need to resort so much to this forcible feeble style, for, among all the modern publications relative to Mary Stuart, his with all its extravagance, is the most readable.

But we now come to a work which, in part, we have already considered,* and which demands attention in a loud and lofty tone. Our standard history cannot be passed over like the ephemeral publications of the hour. Respect for the labour spent in its preparation, gratitude for what measure of merit it displays, and the knowledge that it must exercise an important influence on the public mind, require that it should be patiently examined, and its character only estimated after the clearest proof. The portion of Mr. Tytler's History we proceed to notice, was one beset with difficulty. It is the *pons asinorum* of Scottish history. To him especially was it a bridge over which it was difficult to travel, as he came to it laden with the inheritance of his grandfather's opinions, as contained in a book which he recommends as the best exposition of the subject, but which the public, coinciding in the opinion of Malcolm Laing, has long ago declared to be the superficial work of a man, who, with more than usual confidence, brought to his task little of the industrious learning that rendered the labours of his predecessors endurable, or the vigorous writing that saved them from oblivion. With such feelings and such opinions, it is easy to anticipate the spirit of this history; though a work professing to be impartial, may vary the plan of execution. The Reformation, as seen in the pages of Tytler, appears a reckless and uncalled-for overthrow of the ancient institutions of a land, which, under their protecting shade, had become renowned in Europe. Calmly emerging from the general darkness that overspread the world, its necessities did not require, as its people did not demand, a convulsion so pregnant with immediate disaster and calamity, so doubtful with regard to ultimate advantage, and which was hurried through to gratify the selfish rapacity of the nobles, aided by the extravagant enthusiasm of shrieking fanatics, who imagined their madness to be inspiration. But it is not so much a falsification of facts, as a perversion of motives, with which the history is chargeable. The language employed to designate the Reformers—nobles, clergy, and people—is usually that of cool contempt. Where a direct charge could not be advanced, the most galling and unanswer-

* North British Review, Vol. iii., p. 345.

able of all reasoning—a sneer, is resorted to. "Who," says Paley, referring to the mode in which Gibbon attacked Christianity —"who can answer a sneer?" While Mr. Tytler, for example, refers to the religious establishment as "the *Church* of Scotland," before the Reformation, he never mentions it after that event, but as "*the Kirk*." To be consistent, however, he ought to have treated us, at intervals, with some of the Doric of our Roman Catholic Fathers, whose virtues, he thinks, we would purchase cheaply by their fate. Yet they addressed their Sovereign as "the Queen's heichness," and celebrated Papal sovereignty as "the michtiness of the Paip." It would not lessen their fame one jot in the estimation of the world, as it has not that of their successors, that their words did not flow in the mellifluous music of polished life, and that in the infancy of European language, they partook of the general and prevailing barbarism.

The opening scenes of the Reformation have afforded ample scope for much fiery declamation, and much feeble argument. The history of the Regency of Mary of Guise, has been composed upon the principle of one-sided advocacy of all her measures; her persecution of the Protestants—her violations of treaties and of truces—her dissimulations, artifices, and devices—her determination, against her own better judgment, to carry out in Scotland the policy of the Guises, and to subject it in everything to French domination—are studiously kept in the background, and where incapable of defence, have been subjected to censure diluted. Her ultimate deposition, when patience was exhausted, and when no treaty or obligation would bind, has been denounced with unusual vehemence as "unconstitutional and illegal," (vol. vi., p. 89);* and the feelings of the historian urge him to advance principles, which are the very excess, the jacobinism of tyranny. If we have read aright the history of Eastern despotism, we believe it to be a principle of government there, that the deposition of rulers by their people can receive no sanction from divine or human law; and travellers relate, with words of pity, that amid the snows of Russia, and in other regions of the world, principles equally barbarous are recognized. This, however, was never either the theory or the practice of the people who called the House of Stuart from among the private nobility, or the House of Hanover from the German marshes, to the throne of a great empire. It has ever been a sacred principle among them, that as soon as a ruler gave clear evidence that he was prepared to illuminate the country with the fires of martyrs to freedom or religion, to violate solemn treaties, and render the securities of the nation's privileges an idle name, he had forfeited the throne

* We cite the 2d edition.

whose prerogatives he had abused. The people of Scotland have never on this subject been less energetic in their language than in their actions. While the English Parliament could only utter a shrill and feeble cry that James the Second had *abdicated* the throne, the Scottish Parliament spoke out, with the unsophisticated bluntness of a free people, the wholesome lesson to the crowned despots of the world, that he had "*forfeited*" by his crimes, the inheritance given to his fathers. By whomsoever the law is violated, they have ever maintained, that resistance is the duty of the oppressed. It is so laid down by Paley and by Locke —by all the masters of the science, at whose feet Mr. Tytler or his reviewers would be content to be disciples; and Burke, in the warmest fury of his declamation, never denied the principle, though he disputed the application of it by the sans-culottes butchers of revolutionary France.

Mr. Tytler is not at home on any great question of constitutional government. The leviathan here does not combat in his own waters. A border foray or a deathbed are the things on which he excites our enthusiasm, or depresses our hearts with overpowering sadness. Although the Regent had leagued herself to men and measures abhorred by a people nearly unanimous, and proceeded to annihilate the national independence, while she crushed the national religion; and while that very Regent, a stranger to the country over which she ruled, derived all her authority by voluntary grant of the men who took it from her, we have the historian telling us, that her deposition was "a violent and unprecedented measure, an act of open rebellion; and to attempt to justify their proceedings under the allegation that they were born councillors of the realm, was a specious but unsound pretext."—(Vol. vi., p. 146.) And this statement is made by a writer who had composed many volumes filled with the history of the decline and fall of dynasties, and who had precedents, in every year of every reign he chronicled, for the just or unjust resistance of the mandates of the Scottish kings. To complete Mr. Tytler's picture, it was only necessary to be silent on the moderation of the rebels. The prejudices of honest Keith allowed him a wider liberality. *He* did not conceal the reluctance of the Reformers to proceed to the remedy of deposition; *he* tells the history of their many overtures for conciliation, and how, when backed by an army, they offered complete submission, on the simple condition of toleration for their religion.—(*Keith*, 268.)

Not only have the proceedings of the Reformers in their intercourse with the Regent been caricatured, but after her short unhappy reign was done, and death had closed her triumphs and her defeats, the historian carries along with him the same acerbity of style. The whole history of that celebrated Convention, which, in Edinburgh, in 1560, decreed the downfall of Popery,

has been traced in gall and wormwood. It is represented to be as illegal in its origin as it was violent and ferocious in its decrees. Let it be remembered that the Parliament so denounced, met in consequence of the solemn treaty which closed the war, and that this formed the first and fundamental condition of the peace. The whole nation was aroused; the struggle had displayed the weakness of their oppressors, and in such a time opinions were not silent on their rights as the citizens of a free state. Expectation beat high as to the issue of a meeting, which was attended by all that could lend it honour by ancient nobility of descent, or inspire confidence by private worth. It had to guide the fury of popular commotion, that it might not sweep away in its indiscriminate violence the sound as well as the diseased portions of our institutions and our laws. How it proceeded, let the many statutes directed to the application of practical remedies to practical evils bear witness. There were no speculative experiments, as might have been expected in the storm of a revolutionary change; but each feudal baron, and each honest burgher, in applying himself to a national privilege too long neglected, finished, in a few weeks, a code of laws, which could not be surpassed for sagacious adaptation to the times, by the matured experience of statesmen who had grown grey in legislation.

The validity of these statutes were denied by Mary, when she came (as Mr. Turnbull tells us) "to rule her own barbarians:" an act which formed the root of all her sorrows, by unloosening the confidence of her people, has found, of course, a defender in Mr. Tytler. The Parliament, though called in virtue of the treaty, she refused to recognize, or the treaty itself to ratify. "The Queen of Scotland," says Mr. Tytler, "refused to be bound by an agreement to which she was no party,"—(vol. vi., p. 173;) an assertion based on the alleged fact, which has no authority to countenance it, that Mary's commissioners, in agreeing to the treaty, had exceeded their powers. The consequence was, that during the whole of Mary's reign, the statutes establishing the Protestant religion never received the sanction of the Crown, and it was only in the regency of Murray, that they were put beyond legal cavil.

"The three estates," continues the historian, "had assembled of their own authority; [This is erroneous: they met in terms of a solemn treaty,] and by a series of acts, more sweeping than any that had ever passed in the preceding history of the country, had introduced innovations, which it was impossible could be regarded without alarm. [viz., establishing Protestantism.] They had overturned the established religion, and let loose against all who ventured to adhere to the belief of their fathers, the fury of religious persecution; they had entered into a league with another kingdom, and, as if conscious of the illegal nature of their proceedings, had attempted to pro-

tect themselves against the punishment of the laws by giving a pretended parliamentary sanction to the most violent of their measures." (Vol. vi., p. 191.)

All this vehement and ridiculous declamation has been resorted to for the purpose of justifying Mary in her refusal to sanction the parliamentary decrees. Never was there in Scottish history a convention of the states which spoke with such cordial feeling the wishes of the people; and never were charges more recklessly and unjustly advanced than those produced against it by Mr. Tytler. With regard to its legality, it would be in vain for us to add a word to the philosophical disquisition of Robertson. It had all the formalities of the greatest and most important parliamentary assemblies that ever met. The Queen, through her commissioners, consented, and only withheld her written concurrence when the object was gained of a cessation of hostilities. It was surely surrounded with far more of legal solemnity than that convention which offered the throne to the Prince of Orange, or that Parliament which, in later times, on the insanity of George the Third, conferred a restricted regency on his son. And with regard to "the fury of religious persecution," which they let loose on all adherents "to the belief of their fathers," the historian, as he too often does, resorted to his own imagination. It is absolutely scandalous, at this era of our history, to have accusations advanced which are in direct contradiction to the statements even of contemporary vilifiers of the Reformers. Lesly, the Bishop of Ross, resigns his tone of complaint and menace, to inform us that the Protestants, fresh from the sight of the martyrdom of their noblest spirits, never spilled one drop of blood, compelled few to become exiles, and fewer were imprisoned. This humanity, he tells us, ought not to be concealed. "*Humanitas non est reticenda, quod, eo tempore, paucos Catholicos de religionis re mulctarint exilio, pauciores carcere, morte nullos.*"

It would be in vain to hunt down every small sneer with which the history of the Protestants at this era is told. To exhibit every little perversion would be to weary readers already acquainted with the subject, and would fail to interest others, without entering into long details. There is, however, one fact which, on account of its tangibility, we may note. The Protestants prepared a Confession of Faith, which was laid before Parliament, and which the Catholic members required time to consider, as it

"branched into so many intricate, profound, and important subjects. To these sensible and moderate representations," says Mr. Tytler, "no attention appears to have been paid; the treatise was laid upon the table; the Bishops were called upon to oppugn it upon the instant, and having declined the contest, the consent of the Parliament was given almost by acclamation."—(Vol. vi., p. 184.)

There is here a misrepresentation in every line. Instead of being hurried through with all this indecent haste, the Confession was considered at different meetings, and at distant intervals. It was first placed on the table of Parliament, and all the Roman Catholics were "commanded, in God's name, to object, if they could say anything against that doctrine."—(Knox, Historie, p. 272.) What followed? Let Dr. M'Crie tell us:—

"The farther consideration of it was adjourned to a subsequent day, that none might pretend that an undue advantage had been taken of him, or that a matter of such importance had been concluded precipitately. On the 17th of August," (a month and a half after it was first produced,) "the Parliament resumed the subject, and, previous to the vote, the Confession was again read, article by article."—(M'Crie's Knox, 5th Ed., p. 203.)

We are anxious to ascertain upon what ground Mr. Tytler can here defend himself.

It is only natural to expect that, while the Protestants are exhibited as the reckless instruments of change and revolution, the Papists shine out as the conservators of peace, the friends of learning and education,—mild, intelligent, and moral. Of all unfortunate illustrations, the most ridiculous is that which has been chosen. To fix upon Hamilton, Archbishop of St. Andrews, the most unprincipled and profligate of mankind, for a subject of laudation, appears to be the most Quixotic attempt Mr. Tytler makes against unquestioned history. "He was a prelate," says Mr. Tytler, "whose character partook nothing of cruelty."—(Vol. vi., p. 86.) "He let loose," says Dr. Robertson, "all the rage of persecution against the reformed; sentenced to the flames an aged priest, who had been convicted of embracing the Protestant opinions, and summoned several others, suspected of the same crime, to appear before a synod of the clergy."—(Robertson, vol. i., p. 142.) Walter Mill, the aged priest referred to, was condemned to die by Hamilton's own servant, as no secular judge would perform the deed; and yet Mr. Tytler tells us that "the prelate was innocent of having instigated it." This pious and holy bishop, whom the historian wishes to rescue from the undeserved infamy of three centuries, was the only man who could be found to urge the scheme of *assassinating* Mary in Lochleven, with the view of bringing the throne nearer to his own family.—(Vol. vii., p. 141, Tytler.) We cannot understand the chivalrous fight the historian has made in his behalf. With the view of showing his anxiety for the spiritual welfare of the land, Mr. Tytler notices a letter from Hamilton to the Earl of Argyle, filled with reproaches against his heretical opinions, and expressions of sorrow at his lapse; but he tells us nothing of the answer, which refers to matters of too disagreeable a character

for Mr. Tytler's object. The aged earl refused to dismiss his heretical chaplain at the bishop's command, and told the holy priest such truths as these: "He preaches against idolatry;—I remit to your lordship's conscience if it be heresy or not. He preaches against adultery and fornication;—I refer that to your lordship's conscience. He preaches against hypocrisy;—I refer that to your lordship's conscience." And the letter concludes with an advice to Hamilton to go and do likewise—(Knox, p. 102.)

The thrilling interest of the latter days of "the beauteous Stuart," has completely thrown the story of her early life into the shade; and, in consequence, her defenders have urged her cause not on the sole rational ground on which it ought to rest,—the bad education of a profligate court,—but have resorted to the coarse expedient of accusing every hostile historian as a forger and a knave. To men not misled by the wild chace of a foolish theory—every moment catching the shadow and losing the substance—this style of writing has had its day. The world has become tired of the dull platitudes of declamatory history, which have run from the pen of hundreds, cursed with the scribbling itch of meagre production, with a glib expedition and easy jingle, hiding the truth without touching the intellect by vigorous speculation, or stimulating the fancy by graceful rhetoric.

The education of Mary in France was directed with perverse ingenuity to unfit her for the position to which her destiny called her. She was early instructed in principles of the fiercest intolerance, and the sacred name of religion was employed to varnish deeds at which humanity stands aghast. The intriguing high-priest glosing in the ears of Princes, and the vile ambitious clerical politician, were presented to her unsophisticated mind, as the perfect types of religious teachers. Heresy was gibbeted as the twin sister of treason; and her ambitious uncles ever inculcated it as the unchanging policy of their race, to yield submission to the mandates of the Popedom. At an early age the future Queen of a nation of royalist republicans, was obliged to commit to memory grave discourses, embodying the arbitrary maxims of a despotic government, and her religious and political education only required the moral training of the Court of Catherine de Medicis to complete an instruction destitute of one element of fitness for a Scottish Queen. Amid an eternal round of masquerades, tournaments, and balls, forming the staple business of existence, Mary learnt the morality she was afterwards to practice; and it is a reference to this portion of her history that softens the judgment, on the long line of indiscretions and crimes that marked her unhappy existence.

The ambition of her uncles, the Duke of Guise and the Cardinal of Lorrain, was the cause of many miseries, though the latter appears to have loved her with a warm affection, seldom exhibited

by cold-hearted ambitious men. His death affected Mary in her lonely imprisonment in England, more than any of the other calamities which overtook her. All the world had then forsaken her, and the last glimmering hope of rescue expired when the sad news arrived that his stormy life was done.

"God be praised," she says, in a letter to the Archbishop of Glasgow, "God be praised, if he sends me afflictions, he has thus far given me grace to support them. Though I cannot at the first moment command my feelings, or prevent the tears that will flow, yet my long adversity has taught me to hope for consolation for all my afflictions in a better life. Alas! I am a prisoner, and God has bereft me of one of those persons whom I most loved; what shall I say more? He has bereft me at one blow of my father and my uncle. I shall now follow whenever he pleases with less regret." At the close of her letter she adds this touch of nature:—"I beg you will write me a particular account of everything, and if he spoke of me before his death, for that would be a consolation."—(1 Strickland, 213.) Even in little things he was kind to her. "If," she says, "M. the Cardinal of Guise be gone to Lyons, I am sure he will send me a couple of pretty little dogs."—(Vol. i., p. 209.)

Such were the men who were the early guides of Mary Stuart —men who were kind to her, but knew nothing of the people she was called to govern.

The Scots are naturally a loyal people. Their attachment to the Stuart race, when human prudence had pronounced their fortunes ended, was testified in the two hopeless rebellions of '15 and '45. It was not the glory of renowned deeds, or gratitude to beneficent kings, that enlisted the people's affections for so poor a race. But the national pride was flattered by the circumstance that they were our native kings, and a generous sympathy buried their errors in their misfortunes. It was with this gallant loyalty that a Protestant people rent the air with shouts of welcome, when their Catholic Sovereign disembarked at Leith, and assuredly human speech was never to her a scoff or a malediction, till patience had become exhausted by her folly or her crimes. Every thing was forgotten in the desire to please, and Mary, during her four first years of prosperity, began to think it possible to live among "les bêtes Ecossais."

In narrating this portion of her history, Mr. Tytler has advanced his theory as to the cause of all her miseries. However honest, he tells us, might be the motives of the Reformers, their conduct was, in the last degree, impolitic and tyrannical. They stood in the Queen's path, in her business, and her amusements; embittered her existence by thwarting her personal feelings and her public schemes, and thus, irritation operating upon a haughty mind, self-confident and self-relying, sent her to an extreme in which honour, liberty, and life were lost.

In the naked majesty of metaphysical abstraction, the principle of unqualified submission to a sovereign, whose grace and loveliness were "framed in the prodigality of nature," might be urged with much eloquence by such philosophers as Mr. Buckingham and Mr. Tytler; but the students of the history of a limited monarchy, will be prepared to find no exception made with regard to the violators of its laws. The case insisted on by Mr. Tytler is certainly the best for the enforcement of his theory of submission. The Parliament of 1560 had pronounced the celebration of the mass to be a crime, punishable with heavy penalties, which the good sense of the Reformers never exacted. It was an enactment intolerant and unwise, and which can only be justified on the principle of self-defence, which so often puts to flight all general rules for the conduct of human life, and all the general maxims which ought to guide the liberal and politic legislation of an empire. Knox, terrified at the preparations made throughout the world for the extinction of the heresy of Protestantism, saw, in the Queen's attendance at the mass, a silent influence at work, for the creation of a party to enable the Queen to carry out the bloody scheme, afterwards embodied in the famous League of Bayonne. He never ceased, in consequence, to exclaim against the mass in Holyrood Chapel, as being a violation of the laws, and was met by the sarcastic Lethington with the sneer, that his ideas were only "devout imaginations," while Murray would gruffly speak of the necessity of patience. "The matter fell so hot," he tells us, between himself and Murray, that "familiarly after that time, they spake not together, more than a year and a half."—(Knox, p. 357.)

The question thus raised, as to the interference with the Queen's religion, is of vast importance in the science of government. It is one which Mr. Tytler decides differently from the judgment given by the practical wisdom of the world. We can find in the history of no limited monarchy, that the supreme magistrate was long allowed to profess a religion different from that of the majority of the people over whom he ruled. This is a hardship certainly; but it is one which must be endured with patience, as the counterpart of the privileges of royalty. The divine right of kings was indeed a doctrine incompatible with restrictions and conditions; it was a doctrine which the Stuart race believed, and which they found learned scholars to defend; but it is one totally incompatible with the principles of a limited monarchy, or with any government whatever, which has its foundation in right reason. One of the most important restrictions, is that relative to the sovereign's religion. On all other matters of human knowledge, his opinions may set at defiance common sense; but as soon as he diverges from the received belief, on matters of religion, he not only violates one of the great

conditions, silent or expressed, on which power was given him, but he creates a source of discord and insecurity, rendering his deposition necessary for the public peace. To avoid this rough medicine to a cankered commonwealth, the statesmen of the world have, in modern days, embodied their restrictions in the formality of oaths, wishing rather to be the assertors than remedially the avengers of their rights. They exact it not fromt he malicious love of tyrannizing, as Mr. Tytler tells us; not from the vanity of seeing their own principles decked out in the state dress of power; but their object is the safety of themselves and their country, the annihilation of sources of heart-burning and of anger;—a cool and deliberate principle, which acts irrespective of persons, which two centuries of uninterrupted prosperity has declared to be useful, and the denial of which produced scenes of calamity and downfall, which convulsed the empire, and, in the general ruin, swept away, with an accumulation of sufferings, families who could trace an ancestry through generations of noble and royal descent, but who were too conscientious to capitulate with a religion which they could not extirpate.

It is needless to argue in support of a principle, which at the present hour is the law of the British empire, and which calamitous necessity has created a fundamental principle of monarchical politics. Mr. Tytler, in truth, closed the volume of history when he wrote this portion of Mary's history. Holding the opinions which he does, it is only consistent, to represent the opposition, not very strenuous and not very decided—wasting itself away, rather in peevish complaint than in energetic action, —as factious and tyrannical. A partizan embroiled in the turmoil of the period, or one of the herd of sentimentalists, who have disgraced history by misrepresenting it, might be expected thus to argue; but an impartial historian, desirous of the approbation of the reflecting portion of his countrymen, ought to rise superior to the narrow prejudice, which denounces a true principle, because productive of individual hardship. And, seeing his own opinions denied in theory as they have been trampled upon in practice, there ought to be some concession to the almost universal prejudice, if not the just judgment of mankind.

But there is something still more reprehensible in the account of the Queen's proceedings in regard to religion. Mr. Tytler artfully represents her, in the position of a beautiful princess, kept in duresse by a band of frightful ogres, with long beards and fierce language. He narrates, with his accustomed superfluity of detail, her solemn protestations of her desire to maintain intact the religion of the Protestants; he sinks entirely into oblivion her determination to tear it up root and branch, and her ener-

getic schemes to accomplish this. The League of Bayonne, which she signed, and which was unquestionably one of the most infamous conspiracies ever concocted, is here dismissed with a few small words of regret, that Mary's friendship for her relatives had made her indiscreet. Nothing is said as to her letter to the Council of Trent, wherein she promised her hearty concurrence in any scheme for the extirpation of the "damnable error" that covered Scotland. To reduce laws to silence, and, in the plenitude of legislative omnipotence, to annul Acts of Parliament, was nothing to one educated by the House of Guise. The Act of 1560, which abolished the old consistorial courts, Mary set at defiance, by restoring the consistorial jurisdiction of Hamilton, the Archbishop of St. Andrews. This fact, which was long denied, is now admitted, though Mr. Tytler dismisses it in ten words, and at the same time falls into a most extraordinary admission, as coming from a partizan of Mary;—

> "all unawares
> Fluttering his pinions vain, plumb down he drops
> Ten thousand fathom deep."

In describing the events which followed the murder of Darnley, he states, that "a divorce between Bothwell and his Countess Lady Jane Gordon, was procured with indecent haste; and it was suspected that the recent restoration of his consistorial rights to the Archbishop of St. Andrews, had been made with this object," (vol. vii., p. 90.) This incidental notice, is all the mention of the circumstance in this history; and if the object thus assigned were true, it is clear, according to Mr. Tytler's own shewing, that the Queen was of the foreknowledge of her husband's murder, since the restoration of the Archbishop took place on 23d December 1566, and the King was murdered on 9th February 1566-7.—(Laing's History, vol. i., p. 23.)

These were not the only measures adopted to recall—in the language of Knox—"the Roman Antichrist, by just laws once banished from this realm." The Romish ceremonies in Holyrood chapel, which once were private, were thrown open to the public, and were attended by all on whom the Royal influence could be got to bear. Bedford is extremely lacrymose on her successful proselytizing, (Wright's Queen Elizabeth, vol. i., p. 204;) and Bishop Grindal goes into details as to the preparations made for seizing hold of the city churches, and stocking them with Popish images, (Stripe's Grindal, App. 20.) As all this, and much more to the same effect, has been entirely omitted or slurred over in this history, we shall cite the impartiality of a foreigner, in regard to a point of the last importance:—

"Without," says Raumer, "regarding the warnings of Melville

and other persons attached to her, she persisted in her course; summoned a Parliament to condemn the fugitive lords, and sequestered their estates. She permitted Romish worship to be everywhere celebrated, restored the Archbishop of St. Andrews to all his rights, commissioned him to institute inquiries against the heretics, and deprived the Protestant clergy of almost all the powers which had been granted to them."—(Vol. i., p. 203.)

The tide of Mary's love had scarce risen, when it fell. She found an overgrown school-boy in the room of that being of ideal perfection, framed out when passion and imagination were young. Of his folly, his silliness, and his mean and low vices, ample details will be found in the works now under consideration. It requires no deep knowledge of human nature, to guess the full strength of that revulsion, which turned girlish fondness to intensest loathing, when the proud descendant of a line of kings, who had stooped to marry, found all her sacrifice in vain. It touched her woman's vanity to the quick, to find all her beauty powerless, and the nameless assiduities due to her, never thought of, when some childish rattle called her husband to an excitement suited to his tastes. Affection whose forfeiture is generated in contempt, never returns. A deep injury may be atoned for, but the feeling of contempt implies the uprooting of all the sympathies on which attachment rests.

Mary was not one to feed for ever on the memory of vanished hopes. The murder of the King, followed by her rapid marriage with Bothwell—her dethronement, imprisonment, escape, and ultimate defeat, are crowded into a space so brief, that it is amazing how they could have afforded scope for works so extensive. The whole series of events are fortunately rare in human history, though their perusal delights us with the double charm of reality and romance. Mr. Tytler's opinion evidently leans against the Queen, on the great question as to her husband's murder, though he hesitates to state it. We have now, perhaps, recovered all the evidence which the many changes of three centuries have left us; and it seems hopeless to expect, that a more correct conclusion can be arrived at in some future age, when the besom of a more skilful industry shall have swept out from their obscure hiding places some more conclusive proof, to strike the balance of good and evil, with regard to the actors in that famous tragedy.

It is unnecessary to revive a subject so hacknied, though there are some portions of it we are obliged to notice in discharging our duty to Mr. Tytler. He has left the story in the same position as he found it, with the exception of a new fact as to the time when Mary visited Bothwell at the Hermitage, and a mysterious interlude performed by two Italians, who, after playing certain antics,

vanish in smoke. But there is one point on which our four authors are more or less agreed, namely, that Mary hated Bothwell as intensely as she did his victim. We must meet this, upon the evidence, with an unceremonious contradiction. That she loved him, and for him was content to sacrifice rank and honour, good name, self-respect, the regard of friends, and a nation's affection, is a fact as indisputably proved as that she married him. Of this there is evidence sufficient in the works we are reviewing, without calling in the assistance of the celebrated sonnets, of which controversy, by denying their integrity, has disputed their information. In the season of winter, Mary rode sixty miles in one day to visit Bothwell; but this, according to Mr. Tytler, was on the business of the state: and the consequence immediately was a burning fever; but Mr. Tytler tells us that this was owing to the unhappy bickerings with the King, at that time in the west of Scotland. The most strenuous defenders of Mary, we believe, give up this journey as an act of indiscretion at the best; to speak severely of it, the consequence of a warm affection; to say the worst of it, the evidence of a bad passion, which had grown beyond the restraints of decency and prudence.

Bothwell, the profligate adventurer, so honoured and caressed, took the place of the unhappy King, who was now driven from city to city, without respect or attendants. After Darnley's career was closed, and Bothwell had become the husband of his widow, we find, with the exception of one instance, an unvarying affection between them. When Mary was a prisoner, after the defeat at Carberry Hill, "she avoweth," according to Throckmorton, "that she will live and die with him, and saith, that if it were put to her choice, to relinquish her crown and kingdom or the Lord Bothwell, she would leave her kingdom and dignity to go as a simple damsel with him."—(2 Strick. 280.) And this strong expression of feeling she afterwards repeated in Lochleven, (Tytler, vol. vii., p. 134.) While such were her feelings towards Bothwell, those in regard to Darnley were of such a nature that Bedford tells us, that "it cannot for modesty, nor with the honour of a Queen, be reported what she said of him."

We pass over the indecent haste of the hurried burial; the want of all investigation as to the authors of the crime; the farce termed the trial of Bothwell; his collusive seizure of the Queen at Cramond, and carrying her to Dunbar; their marriage within five months of the murder; the rout at Carberry Hill, and the final overthrow of Langside. Let us follow her to another land, when she was formally arraigned for her husband's murder, and when those celebrated writings were produced upon which all the controversy rests. On this point, a decided advance is made when we find advocates of Mary so well acquainted with the

history as Mr. Tytler, conceding that part only of the writings were forged, and that the rest of them were genuine. Another step would have carried the historian to the conclusion, which he almost seems to hold but is afraid to state, when he reflects upon the strange and inexplicable conduct of Mary in reference to the proceedings before Elizabeth,—inexplicable on any theory except one inconsistent with her innocence. To speak of compromise when a charge of murder was advanced, instead of courting inquiry, which her innocence, if she were innocent, would have rendered so triumphant, carries along with it a moral conviction as irresistible as the most direct evidence could have induced. This is a conclusion consistent enough with the most kindly nature, and with unbounded benevolence of heart; for it is a fatal error to run the parallel between general conduct and the aberrations of passion. Hatred to Darnley sinking into despair of rescue—love of Bothwell amounting to frenzy—were feelings strong enough to shatter stronger principles than those of Mary Stuart, without joining her in the sisterhood of a Fulvia, an Octavia, or a Messalina.

It is a frequent enough episode in the dull uniformity of human life, that selfish interests rend asunder the duties of men, and the passions trample upon both. Mary, never having known the discipline of restraint, made her desires her politics and her morals. Educated in the polished vice and elegant profligacy of a great capital, her religion became pliant to every caprice. Complaint, in truth, was the largest tribute she paid to heaven, and the sincerest part of her devotions. The child of impulse, she could not subdue her feelings to her duties, nor was she able to avoid her virtues or her vices; and thus her melancholy story presents not the gradual wearing away of principle before temptation, but the instantaneous demolition before an avalanche of passion of the frail barriers of modesty and self-respect, implanted in the human heart as antidotes to its native tendency to corruption.

It is a sad and mournful picture to trace the fall of one who began life with such high promise, and to find the greeting, affectionate and respectful,—"Bless her bonnie face,"—soon turned to execration. To see a gentle being grow prematurely old in passions,—and the worst passions that excite us,—compels sorrow at the ruin of noble endowments, apart from the general calamities it engendered. The rash vehemence of her race led her into perilous situations from which she was unable to rescue herself, and from which rescue appeared to afford no relief from misery. Once launched upon the current of passion, she resigned all control over her future progress, and glided onwards with a stream which fast led her to destruction.

The question which so long agitated and perplexed historians, is, however, of nearly as little importance as the ridiculous controversies of the schools. Now, when posterity is called upon to estimate her character, there are sufficient undisputed facts in Mary's history, without insisting on a point, which dogmatism and ingenuity will never settle. "I am afraid," says David Hume to Dr. Robertson, "that you, as well as myself, have drawn Mary's character with too great softenings. She was undoubtedly a violent woman at all times." She made, in truth, a prodigal and wild waste of indiscretions. She did everything to irritate a people jealous of their liberties and their religion; and if she did not authorise the murder of her husband, she approved of it when done, protected the unquestioned authors of it from the just vengeance of the laws, and put the climax to her fate by marrying their chief. There are few among our sentimental writers who have had the boldness to justify these things; and some of them, like Keith, have had the candour to exclaim that there never "was a marriage so scandalous as this." It is well that, in the picture of suffering honour, generosity, and integrity, these writers confine themselves to common-places in regard to the fallibility of human nature, though their strange philosophy has sometimes rounded the edge of virtue so that vice may ride it, and improved adultery and murder into a higher order of infirmity, or a lower description of virtue. But when from sentiment and generality we descend to meaning, there seems insuperable obstacles to any distinction between the murderer and his protector. The laws that uphold society, while they often excite regret as to their want of delicacy in distinguishing between the vices, generally acknowledge the unfashioned virtues, and strike with sufficient force against the greater crimes. They have on this subject pronounced a sentence which recognizes, in the deed of Mary Stuart, no claim to our sympathies or our regards. They declare the accessory to be as guilty as the principal, and visit them with an impartial infamy.

There is nothing in the case of Mary Stuart that takes it beyond a rule, which is not so much of civil jurisprudence as of the reason, and according to the moral nature of man. Has it come to this, that the ruler of a Christian land, who had openly enacted the tragedy of the melancholy Dane—had protected her husband's murderer and married him—should be left unmarked by the reprobation of every heart that has beat with horror at the tale of fancy which genius has immortalized? Truly sentimentalism has reached its verge when it tells out its doleful lamentations on the tardy justice which removed from sovereignty one who had so resigned herself. Had the marriage with

Darnley been one of political necessity, where feelings were compromised for interests, and the exigencies of state policy had demanded the immolation of her affections on the altar of her greatness, there would have been room for the hacknied picture of novelists and romancers. But that one, who had sown the bitter fruit she was obliged to eat, should demand more than justice, is something which can only find support in the indiscriminate eulogy of party, the juvenilities of sentiment, or the absurdities of paradox.

Had Mary perished at Langside, when her banner dragged the dust never again to re-appear, she would not perhaps have excited so lasting a sympathy for her misfortunes. But her nineteen years of imprisonment, and her tragic death, met with the brave heroism of her race, have created for her defence a morality that neither Plato nor the Bible owns. In the groves of this academy, instead of a venerable sage to teach the words of wisdom, we have only a band of whining moralists, whose code changes according to the rank and beauty of the party, whose worth is to be tried. We admire the skill with which the murder and the marriage are overlooked, in order to enforce upon our notice the patient fortitude of a nineteen years' captivity. It was not indeed upon the throne that the best points of Mary's character appeared. It is in the solitude of her prisons that scope was given for the display of those kindly feelings of gratitude to those who, for her, had sacrificed country and kindred—affection to relatives and friends, and even to the very spaniels whom her kindness cherished, joined at intervals with outbursts of that resolute spirit which had saved her amid the early insurrections which she crushed, and which long years of agonizing sorrow could not extinguish. We read of sufferings firmly endured, and of protestations of innocence which never varied, mingled with times of mournful depression, when the heart, overcome with glimpses of lost happiness, rendered the retrospect bitter, and denied for the future even the luxury of hope. The ability with which, unsupported and alone, she met the appalling charges proclaimed against her, and the strength of mind with which she endured her sad reverse, leave us only with mingled feelings of admiration and astonishment. Human nature is indeed less heroic in action than in suffering. The intellectual faculties too, have their virtues as well as the moral, and graceful accomplishments are scarce less commendable than integrity. Thus, the thousands who believe in the whole catalogue of crimes of which she is accused, may, instead of satisfactions enforced, and injuries avenged, be ready to seek a palliative medium for their censure. Their admiration gradually slides into a warmer feeling. Their philosophy, while it becomes a detector of the naked poverty of

humanity, delights again to cover the miseries it has exposed, and not to press too hardly upon one who, if she greatly erred, was greatly tempted, and made her expiation in bitter, and nearly unexampled sorrows.

Passionate and headstrong to a degree which nothing could impede, her conduct presented the most extraordinary amount of errors, contradictions, open and unblushing inconsistencies, likings and hatreds, irregular sallies of virtue, with the violence of a sirocco while the fit lasted, and with all its erratic irregularity. The gentle zephyr scarcely ceased to blow when Boreas began. The same persons were one day covered with caresses, and the next repelled with insults, and threatened with forfeitures. Murray was at first flattered and ennobled, and then hunted as a criminal from his country; received into favour again, and then pursued with unrelenting virulence to the last. Darnley himself had scarce emerged from the caresses of the honeymoon, before he was chased from city to city, as if he had the plague. For Bothwell Mary had sacrificed her all, and yet, on the very marriage-day, she was crying for a dagger to rid herself of life; and three weeks afterwards, when the tide had turned, she was willing to follow him as a simple damsel throughout the world. With grave contempt for the opinion of her people, she loudly proclaimed the continual changes of her inconstant disposition;—enough, in her own day, to affix a levity to her name, that shook all the confidence which her vigorous intellect would have procured her—which often sublimed folly into madness, and which leaves the readers of her story with the painful conviction, that there were moments of delirium in her life. Her evanescent pleasures and her enduring agonies; her first weaknesses and her later struggles; her good resolutions and her reckless schemes, are all inscribed with a blind fatality of error, which ultimately led to the scaffold the scion of an hundred kings.

Next to Mary Stuart, the most prominent actor in that age of stirring adventure was unquestionably the Presbyterian Reformer. The history of Tytler in regard to him, if not so openly abusive as that of Hume, is still calculated to lead to the same conclusion as to his bigotry, intolerance, brutality, and fanaticism. Open and direct abuse gives place to a more artful style. Knox is first described with that faint praise, which insinuates that there is much to blame; and the appearance of extraordinary candour is displayed, by the admission of the quality of courageous energy, which it would be impossible to deny. The history then proceeds in its even tenor of quiet reproof; faithful quotations appear, of every angry expression of the controversial leader of a religious revolution; and the dead calumnies of other days are dragged from the quiet of their tombs to the resurrection of a second life.

We ever understood that Knox deserved well of his country; that along with being a man of keen temper and uncompromising disposition, he laboured in support of honest principles, and for the creation of noble institutions. It is written in histories, though not in Mr. Tytler's, that he squandered himself for the people whom he roused from the lethargic sleep of ignorance, and that no feeling of interest or of friendship ever stifled his rebuke of personal immorality, or of oppression to the poor. The powerful nobility who robbed the Church as the price of their conversion, found in him the untiring denouncer of their ruthless spoliation; and religion, since the elder ages when inspiration gave it vigour, never found a more zealous adherent, or one who more consistently endeavoured to illustrate it by example. All this, however, is blotted out of history. We are presented with nothing but a degrading caricature of a brutal, unfeeling savage, who, like the ghoule in the Eastern tale, delighted in execrations of loveliness and beauty, and whose iron heart never warmed beneath the sunshine of amiability. All the fond colours of reverence and respect, which have ever been associated with the Reformer's name, are thus dissipated like a pleasing vision, which had soothed the world into the tranquil slumber of a foolish ignorance.

That we may not be thought to misrepresent Mr. Tytler, we shall give his opinion in his own language; but as we cannot afford room for a volume, we shall quote every word of his own abridgment of his history, where the name of Knox occurs. Many of our readers may anticipate the following as the epitome of an impartial historian:—

"Knox persecuted for his heretico-Protestant opinions;—refuses a bishopric—lives an exile on account of persecutions in his own country—returns to it, and labours with untiring perseverance for many years to establish Protestantism—rebukes the great for immorality, profaneness, and rapacity—establishes schools, and demands money for their support—appeals to the Parliament and the nobility for a maintenance to the Church—preaches during a long life a true religion—never received a bribe, and left his family so poor that they had scarce sufficient to bury him; and dies with a lamentation universal in his own country, and its echo heard in far distant lands."

This is what might be anticipated; it is not, however, what we find. Here is Mr. Tytler's:—

"Policy and intrigues of Knox—Mary's interview with Knox—his injudicious violence—discontent of Knox and the ministers—proposal of a meeting between Mary and Elizabeth—opposed by Knox—violence of Knox—Randolph censures him—Knox's interview with Mary—his criticism on the Court dancing—violence of Knox—policy of his party—Knox's pulpit address to the Protestant nobles—he attacks the Queen's marriage—his violent interview with Mary—he apostrophizes

the Court ladies—Lethington blames Knox's violence—observations on the conduct of Knox—Knox's return to Edinburgh—his vigorous [why not *violent* this time] exertions—Knox's refusal to pray for the Queen—illness and death of Knox."

Such is a transcript of Mr. Tytler's own epitome of the doings of the Scottish Reformer, in which there is only the one single idea of a savage perpetrating violence and knocks. It is improper, however, to leave Mr. Tytler with the advantage of charging us with dealing in generalities. It may tend somewhat to amusement, if not to instruction, if we shortly examine three distinct charges he has advanced, when, forgetting his Fabian policy on the unapproachable heights of inuendo and sneering, he accuses Knox of hypocrisy and cowardice, violent folly and murder.

Our readers will remember that Knox was a minister in England in the reign of Edward the Sixth, and arrived in Scotland at the beginning of the end of Roman Catholic domination. With his accustomed zeal, he began a crusade against the prevailing idolatry, and soon found at his back the infuriated yells of a thousand priests. Without any support from the nobility—who made the discovery at a later period that their interests and those of the Reformers ran in unison—he was left almost alone to face the storm. He had only two courses open,—either to instigate the populace to insurrection, or to retire into the obscurity from whence he came. At the critical moment he was elected minister of a Protestant congregation at Geneva, which he accepted, as a prudent retreat from the difficulties which surrounded him. He had as a precedent the wise prudence of the German reformer, whose retreat to the mountain castle of Wartburg, saved from a useless martyrdom a life on which hung momentous interests. Mr. Tytler, however, could not so regard the proceeding of the Reformer; and the following is the style in which the charge of hypocrisy and cowardice is sneeringly told:

"Possibly, by retiring, he saved his life; but, judging with all charity, it must be admitted that whilst his writings, at this period, had all the impassioned zeal, his conduct betrayed some want of the ardent courage of a martyr."—(Vol. vi., p. 80.)

There is not perhaps in Knox's history, a passage so calculated to exhibit the genuine unflinching character of the man, as his interviews with his unhappy Queen. Hume, without quoting the only record of them we possess, gives the grossest caricature, if it cannot be more strongly described as a deliberate violation of the truth. Far from being moved with beauty dissolved in tears, Knox is described as gloating in the wanton brutality of insolent reproof. Mr. Tytler is more specific in the narrative, less direct in the charge advanced, equally anxious to create the same impression, guilty of as much addition and as much sub-

traction from the record, as was necessary to his purpose, and equally indebted to imagination for point to his satire.

Mr. Tytler's account of the first interview might have been passed over unnoticed, had it appeared in the Monastery or the Abbot. In the sober pages of veritable history, it is unpardonable for the clumsy mode in which the burlesque is done.

"She (Mary) blamed him," says Mr. Tytler, "for the violence of his book against female government, and with a clearness and vigour of argument for which he was probably not prepared, pointed out its evil consequences in exciting subjects against their rulers."—(Vol. vi., p. 239.)

It would not have served the purpose of Mr. Tytler to have added, as Knox tells us, that "the Queen first accused him, that he had raised a part of her subjects against her mother and herself; that he was the cause of great sedition and great slaughter in England; and that it was said to her, that all that he did was by necromancy."—(Knox, Historie, p. 310.) Mr. Tytler, however, mentions that "she then advised him, to treat with greater charity those who differed from him in opinion," which advice is a pure invention of the historian's, drawn from his lively imagination. After some conversation as to the principles maintained in Knox's book, Mary mooted the dangerous subject of the right of the governed to resist the governors; and she immediately received from the Reformer one of the clearest expositions ever given, of the respective rights and duties of the subject and the ruler. "Think you," said she, "that subjects having power may resist their princes?"—a question which Mr. Tytler burlesques after this fashion. "What, cried the Queen, *starting and speaking with great energy*, do you maintain that subjects," &c. Where is Mr. Tytler's authority for saying that Mary, instead of "starting," &c., was not quietly engaged with her embroidery? The answer of Knox was the manly declaration of an unpalatable truth, little understood in his own day, but which, we will show Mr. Tytler, is expressed in nearly the same language in the pages of Paley and De Lolme. The historian, however, will find in it nothing but sedition; and a few additional touches to heighten the rudeness are thrown in. "It is even so, Madame," (Mr. Tytler narrates), "It is even so, Madame, continued the stern champion of resistance, *fixing his eyes upon the young Queen, and raising his voice to a tone which almost amounted to a menace.*" All this is purely imaginative. So far as history tells us, we are left in utter darkness as to whether Knox spoke in a low whisper or with a loud tone and furious gestures—whether his eyes were on the floor or on the ceiling, or fixed on the Queen or on Murray, or star-

ing straight forward, or winking askance, or half shut. Mr. Tytler also informs us of Mary's feelings as precisely as if she had left a journal of each varying emotion for his service. "At these words Mary stood for some time silent and amazed; she was terrified by the violence with which they were uttered." [A fancy of Mr. Tytler's own, and not a syllable about it in history.] "She thought of her own youth and weakness [*sic*]; of the fierce zealots by whom she was surrounded [*sic*]; her mind pictured to itself, in gloomy anticipation, the struggles which awaited her [*sic*], and she burst into tears." It appears from a letter of Thomas Randolph that the Queen, at the conclusion of the conference, began to weep; but whether this was caused by anger, as Randolph thinks, or by fear, as Mr. Tytler dogmatically tells us, is nothing to the question as to the propriety of the conduct of the Reformer. His opinion was asked on an elementary principle of constitutional government, and not being able to suit his answer "to the appetite of princes," it produced the result, which an unexpected and unpalatable truth would naturally operate on the mind of a passionate and headstrong woman.

This was not the only interview of Knox with Mary. After she had resolved on that unhappy marriage with Darnley, which embittered her existence, she could find no bounds to her anger against Knox for his public opposition. He was summoned before the Privy Council, and after receiving her upbraidings, she burst into tears. "What," she asked him, "have you to do with my marriage, or what are you within the commonwealth?" "A subject," said Knox proudly, "born, Madame, within the same; and though I be neither earl, lord, nor baron, yet hath God made me a profitable and useful member." Mr. Tytler, as usual, makes the plain honesty of the Reformer amount to insolence. When he is anxious to show the Queen that it is no mean sneaking sedition that urges him to argue against the marriage, he told Mary that, "to yourself I say what I spake in public," an expression which Mr. Tytler alters to give it point and virulence—"What I have said in public I here repeat *to your own face*." Knox finally was dismissed, and Mary took "no farther notice of his officious and uncalled-for interference with her marriage." Now, here we say again, is there everything left out that could display the kindly feelings of the warm-hearted Reformer. "Madame," said Knox, "in God's presence I speak, I never delighted in the weeping of any of God's creatures, yea, I can scarcely well abide the tears of mine own boys when my own hands correct them, much less can I rejoice in your Majesty's weeping; but seeing I have offered unto you no just occasion to be offended, but have spoken the truth, as my vocation craves of me, I must sustain

your Majesty's tears, rather than I dare hurt my conscience, or betray the commonwealth by silence."—(Knox, p. 360.) Mr. Tytler's limited space did not permit him to cite this passage.

But there is no portion of Mr. Tytler's History of the doings of the Reformer that excited a greater burst of astonishment than his assertion that "the great ecclesiastical leader Knox was privy" to the murder of David Rizzio. This assertion he takes pride to himself in mentioning, "is now stated for the first time."—(Vol. vii., p. 21, *note.*) It is insisted upon in the text, and is made the subject of an elaborate dissertation in the Appendix. Mr. Tytler was anticipated by such party writers as Goodall and Chalmers, though he does not seem to be aware of it; but the mode in which he proceeds to the attack is one more skilfully formed, and far more calculated to impose upon his readers. He professes himself "unable to escape" the conclusion that Knox was guilty, and, though with lacerated feelings, he is compelled to seal his doom. He does his best, however, to weep tears of anodyne into the wound. So candid a historian, so liberal a writer, so unwilling a witness, necessarily created an impression; and from the Quarterly Review to Mr. Lyon at St. Andrews, has it, in various shapes, been insisted on, until the echo disturbed the philosophic quiescence of German dreamers, who have repeated the story in their sober *Deutsch*, in one of the late numbers of the *Allgemeine Zeitung*.

Mr. Tytler represents the murder as a long preconcerted scheme, sanctioned by the leaders of all the factions but the Queen's. It is unnecessary to this discussion, to ascertain whether the act was a sudden ebullition of passion, or a matured conspiracy; but it is of importance to examine, as to the mode in which it was proposed to remove Rizzio from the fatigues of office. This point Mr. Tytler altogether evades; and his theory proceeds upon the erroneous assumption, that the scheme, as it was executed, was what was originally devised; an assertion made against the most explicit declarations of contemporary histories, that the intention was to bring Rizzio to public trial, and to condemn him with all the formalities of law. This is expressly stated in Hume's History of the House of Douglas and Angus—a work composed from the best and most authentic sources, (p. 290, fol. ed.); in Melville's Memoirs, (Keith, App. p. 121); in the "Relation" of Lord Ruthven, the prime conspirator, (p. 14); and by Douglas of Lochleven, one of the most active of the band. It was their intention, says Douglas, to have "punished him by order of justice, yet God disposed otherways, by such extraordinary means, which, truly my own heart abhorred, when I saw him; for I never consented that he should

have been used beside justice, neither was it in any nobleman his mind."—(M'Crie's Knox, 5th ed., p. 293, *note.*)

It would not have been consistent with Mr. Tytler's theory, unless a barbarous murder had been intended from the first, because the accession to a party, whose object was to bring a supposed criminal to justice, would only be an act of highest commendation. It was necessary, therefore, to keep these authorities untold; and then the argument proceeds to establish Knox's connexion with the authors of a murder, perpetrated with preconcerted aggravations of horror.

We will assume with Mr. Tytler, that a murder was intended from the first—and shortly examine the case he thinks he has established. It appears, that, when groping amid the mouldering records of the State Paper Office, he discovered a letter of Thomas Randolph's, Elizabeth's Ambassador at the Scottish Court, containing an account of the murder, to which, in another hand, there was pinned a list of names, of those who were "at the death of Davy, and privy thereunto." In this list, there occur the names of "John Knox and John Craig, preachers;" and this is the evidence on which the accusation rests.

Mr. Tytler first favours us with a letter from the Earl of Bedford, the Governor of Berwick, to Cecil, the Minister of Elizabeth, in which he, among other information as to the murder, states, that as "Mr. Randolph writeth also more at large *of the names of such as now be gone abroad,* I shall not trouble you therewith," (vol. vii., p. 354.) Randolph, at this period, was resident at Berwick, and not in Edinburgh; and the letter referred to by Bedford, accordingly follows. It is dated the 21st March 1565-6; and in the body of this letter, Randolph gives the list of names in the following terms:—

"The Lords of the last attemptate, which were these—Morton, Ruthven, Lindsay, and Leddington. Besides these, that were the principal takers in hand of this matter, there are also these: the Laird of Ormiston, Hawton, his son-in-law, Cawder, his nephew, Brunsden, Whyttyngham, Andrew Car of Fawlside, Justice-Clerk's brother, George Douglas, and some other; of the town of Edinburgh divers."—(Vol. vii., p. 355.)

This is the list of Randolph, and in it Knox's name does not appear; but Mr. Tytler found a piece of paper, pinned to the letter, with some names, written in some unknown hand, which he says was the list Randolph was to send. Now, here, we humbly confess ourselves unable to follow Mr. Tytler. We have in Randolph's letter—in the body of it, and in his own handwriting—a precise definite list, which would be without any meaning at all, if the loose slip of paper was also to be

held as *the* list. This separate paper is not mentioned, moreover, as having been sent along with the letter; it is not written by Bedford or Randolph, or by any Secretary of Randolph's, but, according to Mr. Tytler, it must have been by some clerk of Bedford's, whom Randolph must have hired for the occasion. There is not the slightest evidence that it was seen by either of the ministers. The whole bond of connexion between it and their letter is the pin, just as the sole connexion between one part of Mr. Tytler's argument and the rest is the binding. That it was written by Bedford's clerk, we have nothing but Mr. Tytler's guess as proof; that it was a *jeu d'esprit* of some of the clerks in the London office, we offer as another guess. It is an anonymous, unauthenticated, nameless, scrap of paper, gathered from a mass of similar rubbish, to be rendered by Mr. Tytler powerful enough to annihilate the concurring testimony of all contemporary history!

From all this, however, Mr. Tytler maintains, that "the inference is inevitable." John Knox, in "an authentic list," is described as privy to the murder. Having thus doggedly pronounced his decree, Mr. Tytler declines an examination of the list, with the view of ascertaining if it be consistent with other acknowledged facts, or even with itself. It contains, however, several blunders, in the only two lines of narrative with which it favours us. It professes to be "a list of names, of such as were consenting to the death of David," which is totally contrary to the character of the list which Bedford said Randolph was to send, for *it* was only to contain "the names of such *as be gone abroad*;" a description which might apply to Knox, as he left Edinburgh on the Queen's return from Dunbar. There are only sixteen names given; but in the appendix to Keith, there is a list of those charged by the Privy Council as having been accessory to the crime, amounting in number to seventy-one; and in Pitcairn's Criminal Trials, there will be found thirty more. This is the first error, though it is not the greatest. It concludes with informing us that "all these were *at the death of Davy*, and privy thereunto, and are now in displeasure with the Queen, *and their houses taken and spoiled*." Here there are two gross mistakes. We never before heard it whispered, that either John Knox or John Craig was "*at the death*." Crawford and Blackwood, though they covered this part of history with the most impudent falsehoods, never crowned them by one like this; and Mr. Tytler's caution came to his aid. He will not believe the plain statement of his own authority, and he stops short of the charge, that Knox gave one of the fifty-three wounds. The paper is, however, too valuable to be rejected as unworthy of credit; it merely contains an error, and must be understood to

mean, "that all these were at the death of Davy, *or* privy thereto. After the crack has thus been soldered, another yawns, when we are informed, that the houses of all the persons named, were "*taken and spoiled.*" This is unquestionably untrue as regards Craig, who remained in Edinburgh all the time labouring in his vocation; and we cannot in any authority, printed or unprinted, find the slightest warrant for saying, that such a fate overtook the establishment of Knox.

Thus, therefore, in whatever way we regard this scrap of paper, we find it like Falstaff's regiment, "ten times more dishonourable ragged than an old faced ancient." It leaks at every corner. It would have been held up to scorn and ridicule, had it been urged to support any of the charges against Mary; but with regard to Knox, where slight wounds are found, they are diligently aggravated, or scratched till they are made.

Mr. Tytler expends great industry in establishing that Randolph and Bedford were both in the full knowledge of all the facts relative to the conspiracy. Here also he entirely fails. With singular inconsistency, while he maintains the truth of the list, on the ground that "these two persons, the Earl of Bedford and Randolph, were intimately acquainted with the whole details of the conspiracy,"—(vol. vii. p. 357) he, in the next page, rejects this ground of credibility, and puts it on the information communicated to them after the event, "while it was yet new, and after the arrival of Lord Ruthven" at Berwick, from whom they received the whole details.—(Vol. vii., p. 360.) Again, in the following page, he makes another wheel, and after adopting his own list, because it was written "after the arrival of Lord Ruthven," he rejects a third list, to which we shall immediately refer (which omits the name of Knox,) because "the chief authorities of both account and list were Morton and Ruthven."—(Vol. vii., p. 361.) That these were not the chief authorities shall be immediately shown; but in the meantime, we rather think Mr. Tytler is more at home in describing death-bed scenes than in chopping logic.

It appears from all the evidence we possess, to be perfectly manifest, that neither Randolph nor Bedford knew anything of the details of the conspiracy, except what they obtained from the flying reports of the refugees who were daily flocking to Berwick. This can be clearly established without relying upon any admissions we might draw from Mr. Tytler's language. Besides the list contained in the body of Randolph's letter of 21st March, and the scrap of paper which Mr. Tytler found pinned to that letter, there exists a third list not written by a clerk, not unsubscribed, not unauthenticated; but in the handwriting of Randolph himself, and authenticated by the subscriptions of him and Bedford; *and in this list also the name of Knox does not occur.* This

list was sent on the 27th of March, with a minute account of the conspiracy, to the Council of England, and after every means had been adopted for arriving at the truth.

We have this important document printed elsewhere than in Mr. Tytler's history.* From it, it appears that both Randolph and Bedford were in the dark in regard to the whole matter, and resorted to every expedient to collect information. They state, that "hearing of so many matters as we do, *and finding such variety in the reports*, we have much ado to decern the verity, which maketh us the slower and loather to put anything in writing." [This uncertainty as to facts, be it observed, existed no less than six days, after Mr. Tytler's famous "authentic list" is said to have been sent off by Bedford's clerk to London.] The writers then state, that "we would not that your honours, and and by you the Queen's Majesty, our Sovereign, should be advertised but of the very truth, as near as we can possible." How did they proceed? "To this end, we thought good to send up Captain Carewe, who was in Edinburgh at the time of the last attempt, who spoke there with diverse, and after that with the Queen's self and her husband."

Thus, therefore, on the 27th of March, eighteen days after the murder, when the usual exaggerations and falsehoods that attend the first report of a startling event had died away, and when the English ministers had derived their information from the sure source of a special envoy, they sat down to write a deliberate account "of the very truth," "willing to our utmost part to inform you the truth." We beg attention to the data on which their statement is founded, on account of a perversion of fact by Mr. Tytler. They distinctly state, that their information is "conform to that which we have learned by others, and known by his (Captain Carewe's) report; we find the same *confirmed* by the parties selves that were there present, and assisters unto those that were executors of the deed."—(Ellis' Letters, vol. ii., p. 208.) In defiance of this explicit declaration, that "the chief authorities" were authentic statements made by the special commissioner and others, "*confirmed*" merely by Morton and Ruthven, we have Mr. Tytler, for a purpose of his own, risking the extraordinary assertion, (we will not characterize it more severely,) that Morton and Ruthven were the "chief authorities." The object of this is, to take away from the list the character of being impartial, by rendering it entirely the work of Morton and Ruthven, who, Mr. Tytler again most gratuitously, and without a shadow of evidence, tells us, wished, with Roman generosity, to screen Knox by sacrificing themselves.

* Ellis' *Letters*, vol. ii., p. 207.

In this list of 27th March, we have "the names of such as were doers, and of counsel in this last attempt;" and neither the name of Knox nor of Craig appears. Mr. Tytler accordingly very naturally cross-examines himself in the following style:—"Why do you reject the evidence of this second list, and why are we not to believe this solemn declaration absolving the ministers of Scotland, and of course Knox with them, from all participation in the murder?"—(Vol. vii., p. 360.) His answer to this sensible question, and the reply of his opponent, reminds one of the remark of Bishop Horne, that "by the writers of dialogues matters are often contrived, as in the combats of the Emperor Commodus, in his gladiatorial capacity, where the antagonist of his imperial majesty was allowed only a *leaden* weapon." He first asserts that Randolph and Bedford, in direct contradiction to their own averment oftentimes repeated in their letter, made up the list under the dictation of Morton and Ruthven, and that these two worthies had some inexplicable interest to conceal Knox's concern in the transaction. That they had any such interest, farther than the interest of truth, we again affirm to be destitute of proof, and has been invented solely to meet the exigencies of Mr. Tytler's argument. Again, Mr. Tytler not feeling secure on this point, makes another gratuitous assertion, when he says, that Randolph would be more precise on delicate matters in his private letter to Cecil of the 21st March, sending the scrap of paper, (assuming that he sent it, of which there is no evidence,) than he and Bedford would be to the Council in their letter of the 27th. That they felt any such delicacy is also contradicted by the very letter in question; for, in mentioning the insinuations against Mary's honour, they write in the margin thus:—

"It is our parts to pass this over in silence, than to make any such rehearsal of things committed unto us in secret; but we know to whom we write."—(Ellis, vol. ii., p. 229, *note.*)

But secondly, Mr. Tytler having thus argued that the list of 27th March was concocted at *Berwick* by Randolph, Bedford, Morton, and Ruthven, absolutely forgets what he had written, flounders into a new contradiction, and transfers the *locus delicti* and the culprits to London, where he makes Cecil, "the secretary of Elizabeth, modify and recast the story, after the failure of the conspiracy, and with the approbation and by the directions of Elizabeth."—(Vol. vii., p. 360.) One of these arguments must be false. It is clear that the very same act could not be done at Berwick and at London; and that, too, by different people. On the authority of the Italian manuscript which Mr. Tytler cites, he may maintain *à l'outrance*, if it please him, that Cecil concocted the most enormous falsehoods

on the subject; but it is absolutely amazing how he imagines that, in consequence of this, Cecil had prepared the list of 27th March, when that very list itself now lies in the British Museum, patent to all the world, and, as he himself states, "in the handwriting of Randolph." !!!

So much for this third list. We now come to a *fourth*, as contained in another letter by Randolph. He here informs us, that "there are privy in Scotland these; Argyle, Morton, Boyd, Ruthven, and Liddington. In England these; Moray, Rothes, Grange, myself."—(Tytler, vol. vii., p. 25.) The name of Knox does not here occur. Nor does it in the *fifth* list, preserved in the appendix to Keith.

But this is not all. Morton and Ruthven wrote from Berwick a letter of their own to Cecil, in which they say that—

"It is come to our knowledge that some Papists have bruited, that these our proceedings have been at the instigation of the ministers of Scotland. We assure your Lordship, upon our honour, that there were none of them art nor part of that deed, nor were participate thereof." —(Tytler, vii., p. 360.)

Mr. Tytler again puts himself through the catechism. "Why not believe Morton [where is Ruthven?] when he states upon his word of honour that none of the ministers of Scotland were art and part of that deed?" He answers, that Morton did not know the meaning of *art and part*, seeing that on his own trial, he denied that he was art and part of the King's murder, though he admitted foreknowledge of it. But if this be the case, what does the other statement, that none of the ministers were *participate* in the murder mean; and in order to render this absurd hypercritical argument effectual, be it observed, that it is necessary to leave out of view that the letter is not Morton's only, but the joint production of him and Ruthven, and that the latter must have been equally obtuse in matters of philology.

There are still, however, some arguments remaining which we ask indulgence for examining also, as the matter involves so much the credit of an illustrious name.

"Another corroboration," says Mr. Tytler, "of his accession to this conspiracy was his precipitate flight from Edinburgh, with the rest of the conspirators, upon the threatened advance of the Queen to the city. Knox fled precipitately, and in extreme agony of spirit, to Kyle; and as we have already seen, did not venture to return till the noblemen rose against the Queen after the death of Darnley. If he was not implicated, why did he take guilt to himself by flight?"—Vol. vii., p. 359.

There is an extreme and ludicrous rapidity in a conclusion, which is neither morally just nor consistent with the facts. Flight by Knox before the Queen, marching on Edinburgh at the head of troops, was only a common measure of prudence in

his position. We have already seen that he frequently came into collision with Mary, and that her exasperation had reached such a point that she declared before her council— "I vow to God, I shall be once revenged."—(Knox, p. 359.) At this very time, too, he was a proscribed and marked man ; and the very first person to be seized during the license of military misrule. In that old contemporary diary, titled "A Diurnal of Occurrents," which Mr. Tytler estimates so highly, we are informed that,

"upon the 19th day of August, the King (Darnley) came to St. Giles Kirk, and Johne Knoxe preachit; quhairat he was crabbit, and *causit discharge* the said Johne of his preitching."

Knox being thus prevented from discharging duty, it appears that he applied to the General Assembly, which met on 25th December, "for licence to passe to England," because "the exercise of his ministrie in Edinburgh was suspended,"—(2 Calderwood, p. 340 ;) and to this request, the Assembly acceded, on condition that he returned before the following June ; now, seeing that Knox was in Edinburgh, on the 9th of March, when Rizzio was murdered, two months after the Assembly had sat, it is doubtful whether he had gone to the south. At all events, this is clear, that Knox was idle in Edinburgh, and labouring under the marked displeasure of the Court, and therefore, of all others, the first person that would have been summarily dealt with, on the occasion of an irruption of undisciplined troops into the city. On all these facts, Mr. Tytler has, however, kept a guarded and discreet silence.

He has also been mute as to the mode in which the Queen's forces fulfilled the worst anticipations of the refugees. The Diurnal of Occurrents informs us, that they recklessly entered the houses of the citizens, spoiled them of their goods, and without a shadow of suspicion, hurried them to prison. Randolph and Bedford tell Cecil that "diverse of the towne folk, honest men, were committed to prison, and diverse escaped,"—(2 Ellis, 233 ;) and "the extremitie is such, as under the Frenchmen, their lives were never so sore."—(*Ibid.*) This is farther confirmed by David Buchanan, who wrote the fifth book of Knox's history. "In the meantime, the men of war committed great outrages, in breaking up doors, thrusting themselves into every house."—(Knox, Historie, p. 432.) Many of the poor burghers fled from the city in terror. Two of them thus narrate their story :—

"They were in their own houses at supper, ignorant of the thing attempted, until the common bell rang, at which time we passed in company with the Provost, as many more did to the abbey, and that same night returned again and passed to our beds, within our own houses. This is the plain and simple truth of our parts." Although

this was all the connexion which this cutler and cordiner had with the matter, they state that they "*for fear absented themselves*, and so was put to the horn,"—a proceeding never attempted against Knox.—2 Pitcairn's Crim. Trials, p. 483.

So much as to Knox taking guilt to himself by flight. We come now to Mr. Tytler's argument, drawn from the opinions Knox is said to have expressed when the deed was done; for Mr. Tytler will not rely upon his "authentic list" as being absolutely conclusive. He quotes a passage from the fifth book of Knox's History, where the death of Rizzio is thus spoken of:—

"After this manner above specified, to wit, by the death of David Rizzio, the noblemen were relieved of their trouble, and restored to their places and rowmes, and likewise the church reformed, and all that professed the evangill within this realm, after fasting and prayer were delivered."

Now it is matter of notorious fact, that the fifth book of the volume, which goes under the name of Knox's History of the Reformation, was not written by him; and if this be the case, why should the historian drag in a passage, written by another hand, full sixty years after the grass was growing green upon his grave? Why should Knox be made responsible for the reflections of David Buchanan, with which that worthy gentleman enlightened the world in the following age? Knox himself expressly states, in incidentally referring to the death of Rizzio, and declining to tell the story, that "he refers it to such as God shall raise up to the same." As the force of all this could not be disputed, Mr. Tytler endeavours to implicate the Reformer, by insinuating that the statement might be found "in his notes and collections," for which however, we have only the worn-out authority of the historian's imagination, which can never take a flight except in one direction.

But the reflection itself contains nothing, that any Christian can or will deny; and though our business here is not with David Buchanan, we cannot allow Mr. Tytler to run away with the idea, that he is engaged in a holy work in denouncing him. We are informed that a man was slain, and Buchanan terms the authors of the deed "murderers,"—(p. 431.) He then states that the consequences of this murder were beneficial to his country, inasmuch as it saved the Church from great and impending calamity. He does not, however, laud the murder, though he returns thanks to heaven for the deliverance from tyranny which it produced. This distinction is clearly brought out by the mode in which Dr. M'Crie relates the feelings of the Reformer. In his first edition he says, that "there is no reason to think that he was privy to the conspiracy that proved fatal to Rizzio; but it is probable that he had expressed his satisfaction at an

event, which contributed to the safety of religion, and of the commonwealth, if not also his approbation of the *conduct* of the conspirators." But in his subsequent editions, observing that his language did not convey his meaning, he altered it to the effect that Knox expressed "his approbation of the *object* of the conspiracy,"—that is, to secure the reformed religion. Mr. Tytler, however, with unworthy disingenuity, quoted the passage in the first, instead of the fifth edition, as it suited his argument better. We could cover pages with farther evidence on this point; but let the following reflection of Robertson's, on the death of Beaton, suffice, as it is the same idea which, in the person of David Buchanan, has been so condemned:—

"Thus," says Dr. Robertson, "did these men *deliver their country*, though by a most *unjustifiable* action, from an ambitious man, whose pride was as insupportable to the nobles, as his cruelty and cunning were the great checks to the Reformation."—(Vol. i., p. 96.)

Knox's opinions on the subject of tyrannicide, are also brought in as an additional argument in favour of the theory of probability. These were in some respects peculiar, but of the great leading principle, Mr. Tytler will find that Paley's philosophy is only an expansion. Knox had other speculative opinions, like all speculative men, which he would hesitate to put in practice. He maintained, for example, that no woman could be a sovereign; but he did not refuse to recognize Queen Mary and Queen Elizabeth. We do not find, though Mr. Tytler asserts it, that Knox regarded "Senzeour Davy," in the light of a tyrant, to whom extreme measures should be applied; nor can we recognize in a speculative opinion of Knox, any more than of Paley, a proof of murder.

On the return of the Queen from Dunbar, the Privy Council was immediately convened, in order to bring down upon the murderers the punishment of the laws. Their directions on this head were of the most sweeping description;—"The Lords think expedient, that all that were of the device, council, or actually at the committing of the slaughter, shall be prosecuted by order of justice."—(Keith, App. p. 131.) Accordingly, seventy-one persons were put to "the horn," which, we understand, involved the pains and infamy of rebellion. And, in Pitcairn's Criminal Trials, we find that during the succeeding months of April, May, June, and July, this indiscriminate blistering of the lieges was kept up.—(Pitcairn, vol. ii., p. 283, *seq.*) High and low, rich and poor, were denounced; cordiners and cutlers in the Canongate; residenters in Musselburgh and Dalkeith, were all involved in the indiscriminate forfeitures. Suspicion in nearly all cases was the ground of charge; and hence the simple, obvious,

but important question, why was Knox not denounced, seeing that "he took guilt to himself by flight?"—seeing that he was at the moment suffering a punishment imposed upon him by the King, who, in disclosing the names of all the other conspirators, would not surely overlook the man who had on other points displeased him? Was it not because no such interpretation was put upon his conduct by those who had every wish to put it, and because the breath of slander had not, in his own day, dimmed the lustre of his name?

The last argument we now approach—and it fortunately is one which may be disposed of in a sentence. There was a religious fast held in Edinburgh, during the week on which the murder was perpetrated, and which, Mr. Tytler tells us, the ministers took advantage of, in order to preach fiery sermons suited to the times. It is clear that their motive in this, was to prepare the public mind for the coming tragedy. Unfortunately for Mr. Tytler, however, it is upon record, that this fast was ordained to be celebrated by the General Assembly of the Church, which had three months previously closed its sittings; the subjects of exhortation were expressly stated; a regular treatise for the fast was prepared; and, with general directions to apply their sermons to sins of all times, they were specially to have in view, the calamitous position of the country at that period, by the banishment of the Protestant Lords, the open celebration of the mass, the danger that threatened the existence of the Church, and the insecurity in which the whole Protestant community was placed by the Queen's accession to the Bayonne League. These were the causes that induced the ministers so to preach. These are the reasons assigned by our historians, until we come down to Goodall, who first put upon it a sinister interpretation —(vol. i., p. 248), which "my grandfather" copied, and which the grandson has again transcribed *verbatim et literatim*. The famous scrap of paper is indeed the only part of his story, on which Mr. Tytler can claim the character of genius—thorough originality. On other points he serves up to us the old rinsings of forgotten virulence, distilled in the alembic of an affected impartiality, whose greatest virtue is to hate and despise with the dignity of moderation.

All contemporary history—all the private correspondence of the age of Knox—is silent on the subject of his accession to the murder. We have examined every printed treatise on the subject, and many of the MSS. that still exist, and in not one of the laboured journals, or didactic histories of either enemies or friends—in not one of the numerous letters written for private perusal, and uninfluenced by any sinister purpose, have we been able to find one single inuendo or insinuation to corroborate the

tale. The author of the "Diurnal of Occurrents," who is supposed to have been some person about the Court, and who terms the Queen "the anointed lieutenant of the Lord," while he mentions that Knox left Edinburgh "with ane greit murmyring of the godlie of religioun," (p. 94), does not even hint that he was a conspirator. Melville, the Queen's friend, to whom Knox was sufficiently distasteful, is also silent. The historian of the doings of "James the Sext," who was a Papist, and discovers a partiality for Mary, is equally dumb. Blackwood, who invented as many falsehoods as Hector Boece himself, will not charge Knox, though a "heretic and necromancer," with the guilt of Rizzio's death. Nor is there one remark to this effect, in the three collections of private correspondence from all quarters, and to many different persons, describing minutely the events of this period, published by Sir Henry Ellis, by Mr. Turner, and the Maitland Club, whose volume entitled, "Selections from unpublished MSS. in the College of Arms and British Museum," contains many letters which were before unknown. Crawford, the historiographer of Anne, who gives us the delectable piece of information, that *Bothwell* "was unanimously acquitted, by a very honourable jury, of all suspicion as well as action of murder (of Darnley); not so much as one probable circumstance being adduced against him," (p. 17), will not add another sin to his conscience by accusing Knox of murder. The author of the Memoirs of Lord Herries, the defender of Mary, is also mute; so is Spottiswoode, and so is Keith.

Thus, therefore, with all this body of overpowering and invincible negative evidence, we have four distinct lists of the murderers or their accessories, in none of which does the name of Knox appear,—set in opposition to a miserable rag of paper, unsubscribed, unauthenticated, referred to in no letter, author unknown, date *in nubibus*, in short, without one single element of that evidence on which human opinion rests, and without one single recommendation to induce us to treat it with respect, or to give it credibility. If Mr. Tytler is not ashamed of his allies, we are. It is our respect for him that has made us march through Coventry with the "authentic list" and its subordinate arguments. "No eye hath seen such scarecrows; nay, and the villains march wide betwixt the legs, as if they had gyves on. There's but a shirt and a half in all the company, and the half shirt is two napkins, tacked together, and thrown over the shoulders, like a herald's coat without sleeves."

Finally, Mr. Tytler, according to his usual process of assumptive argument, having established that Knox was privy to the murder, slides into the astonishing assertion, that "the *Reformed party* in Scotland did not hesitate to adopt" the scheme "to

break off the Parliament by the murder of Rizzio."—(Vol. vii., p. 21.) This is multiplication at a rapid rate. The "Protestant Barons" are first accused; in a few pages farther an addition is made in the persons of "the chief ministers;" and in ten lines afterwards, the change is made into "the Reformed party," (vol. vii., p. 21.) We are obliged to appeal to Mr. Tytler's own sense of the ludicrous, in regard to the injustice of such reckless writing; and we call upon him to inform us by what privilege he thus considers himself entitled to deal about his violent charges against the illustrious ancestry who have ennobled his country by their virtues?

We have now endeavoured to discharge a duty as disagreeable to us as it can be to Mr. Tytler. We have endeavoured to rescue from undeserved reproach, the memory of a great man; and before quitting the subject, we wish to have a few parting words with the historian. We believe that he is not ambitious of the wholesome discipline of derision, or the severer trial of unceremonious and indignant contradiction. If we appreciate him correctly, we believe him conscious of the value of a strict adherence to facts, and that he knows that the restraints of the ninth commandment strike against the historian of the past equally as against the journalist of the present. He will pardon, therefore, his reviewers, if, when they find no factitious recommendation of philosophy or eloquence, or peculiar neatness of expression in his pages, they are apt to speak with more impatience, and with less periphrasis of the prejudices of mediocrity. Great command of temper is necessary in dealing with a deliberate twisting of authorities, a glozing over unquestioned facts, an omission of what was necessary to the defence, while professing to give it all; insinuation where assertion could not be hazarded, and the integrity of fair argument despised under the guise of a reluctant accusation, and unbounded candour assumed, but never shown. The historian possesses, too, a large amount of obstinacy. He never drops a theory he has promulgated. His account of Wallace, and his speculations as to Richard the Second, have long been gathered to the granary of superficial nothings—and in spite of the ridicule of a hundred pens, they are printed in every edition as at first. In answer to Mr. M'Crie's letter in regard to Knox, Mr. Tytler states his dogged determination to persevere in the charge he has advanced; and we have therefore the less hesitation in dealing with an opponent so confident in his resources. He must, however, remember, that the fame of the Reformers is something that comes home to the bosom of Scottish affections. It is not a mere matter of metaphysical discussion, or of deep erudition; it is something more directly personal,

and verging on the confines of national dishonour. Like the fabled garden of the Hesperides, the memory of the Reformers is to be kept sacred; and when a reckless hoof enters to lay waste the borders and the bowers, it is a sacred duty to hunt the intruder into incapacity for mischief. While Mr. Tytler insists in printing charges of murder, patiently refuted, he has no complaint to urge if his history be treated as the unwieldy pamphlet of a partizan; and while it ought to be only rational anticipation, it cannot form the subject of wailing or disappointment, when he finds that his oblations to his prejudices, though ushered in with a potent emphasis and voice of authority, have roused only the indignation of his countrymen, and will fail with the rest of mankind as either argument or eloquence.

Mr. Tytler, in truth, could not appreciate the Reformer. The offspring of an obscure race, there was no prestige of noble blood to redeem his errors; there was none of the famous chivalry of the military knight-errants, to make his history romantic. He had no titled name to give dignity to his life; he lived not in a palace, and though a minister, he was not an archbishop or a lord. There was not about him one single characteristic of those, which constitute Mr. Tytler's heroes. He had not enough of genteel respectability; and when the adventures of some titled oppressor are to be had in heaps for the gathering, where is the use of dwelling on the moral preachings and the school-erections of an uncivilized obscure!

Yet, after all, we beg to ask, when a moment of philosophical impartiality will come, was there not something in the career of Knox, of the same grand originality by which humble birth has only been made a lever to its inheritor for a more exalted rise? We recognize in him the same force of character, the same inflexibility of will, the same patient perseverance, and profound knowledge of human nature, that characterized many of the successful leaders thrown up by the wild surges of revolutions. He knew well how to mould human passions to his will; to arouse the mob, or make them quiescent; to encourage the nobles, or to rebuke them when their courage or their virtue failed. No man can read his speeches, without seeing that each one of them was the skilful composition of a sagacious Antony, moving his hearers according to their dispositions, to revenge not a murdered Cæsar, but a rejected truth, on which their liberties and their religion hung. "His single voice," says Randolph, "could put more life into a host than six hundred blustering trumpets." Audacity in his circumstances was prudence; but he never, in the lowest extremity of his fortune, forgot the distinction between good and evil—never swerved from what was manly and honour-

able; and, if uncompromising in his hatreds, he never expressed them without a warrant, and never thrust himself between a good man's merit and his reward.

He was a man, too, of learning and liberal accomplishment. He exhausted the knowledge which his own country furnished, and travel in other lands completed an education, which embraced the whole range of the learning of his age. His educated taste shines out in the vigorous English of his works, hurried through in the distant intervals of a busy life, and flowing with a purity unequalled in the writing of any contemporary Scotchman, with the exception of Secretary Lethington. His frequent references to all that was then known of polite literature—brought in with the easy unpedantic grace of one who knew his subject—rebuke the unmannered slanderers who can find for him no choicer epithet than a "rustic apostle," incapable of any sympathy with the elegant refinements of polished life. Persons acquainted with his writings, must be surprised at the charge so frequently and so flippantly advanced, that he was a gloomy and bigoted fanatic. Writers like Miss Strickland, who know absolutely nothing of the history of the man whom they malign—and historians like Mr. Tytler, who can see nothing but through the medium of their prejudices—are only working in their vocation when they uphold their caricature for truth. Had they as diligently read, as they have diligently written, about the works of this austere and coarse enthusiast, they would have found his pages filled with passages of the most racy humour, and genuine touches of the most affecting pathos. After the porch is passed—rendered somewhat forbidding by the quaint style of the sixteenth century—we are ushered into a temple of manly thinking, supported by the pillars of a correct morality, and enriched with the decorations of a vigorous fancy and warmth of feeling. In telling us the eventful history of his times, he descends at once from the loftiest to the homeliest key; and while our feelings are hurried away by the touching narrative of Wishart's sufferings, we are obliged, in the midst of it, to laugh at the untimely humour of the historian. When he has raised our excitement by torturing sarcasm or fierce invective—with the thunders of the stern moralist, or the rebukes of the religious teacher—he can at once melt our hearts by a melancholy theme, or chase away our sorrows by a stream of contemptuous jocularity or unsparing ridicule.

We would not defend any man from his cradle to his grave. The brightest sun that ever shone is marked with spots; and the career of the Scottish Reformer presents, in many things, the taint of our fallible mortality. But in the most rigid of our speculations on the bankruptcy of human nature, we certainly

cannot cite him to illustrate its worst or its weakest side. Much has been said and written as to the unusual acerbity of his style. The refined sentimentalists of modern days, in describing it, have equalled the most violent of his declamatory passages. All of them appear to be "absolute gentlemen, of very soft society, full of most excellent differences and great shewing; indeed, to speak feelingly of them, they are the card or calendar of gentry." They appear to forget that the milky blandness of disposition they sketch out, is naturally incompatible with that energy of character ever found in the leaders of revolutions. Luther illustrates the remark; and the generous German, when he was most scurrilous to Tetzel, had yet a kindly feeling to the party on the rack. Against him the same charge has been often adduced, and certainly with more justice than against Knox. It may not be held a complete justification of the latter, that for every harsh epithet he threw he received a ruder in return; and his invectives for undoubted crimes, were met by accusations of crimes he never did. Archibald Hamilton accuses him as guilty of adultery and incest. Another writer mentions, that his maid-servant fainted when, on looking through a hole in the door, "she saw his master, Satan, in a black man's likeness, with him." James Laing also was ready to establish, "*quod patris sui uxorem violarat.*" This same writer also incontrovertibly proves, that Luther was carnally and spiritually begotten of the devil; and Hamilton also mentions the price of tenpence, as that at which the heretics sold their souls to the enemy of mankind.

But the charge of using railing language, though the common blot of the controversial literature of his age, has been greatly exaggerated as regards Knox. "God is my witness," he said upon his death-bed,—"God is my witness, whom I have served in the spirit in the Gospel of his Son, that I have taught nothing but the true and solid doctrine of the gospel of the Son of God, and have had it for my only object to instruct the ignorant, to confirm the faithful, to comfort the weak, the fearful, and the distressed, by the promises of grace, and to fight against the proud and rebellious by the divine threatenings. I know that many have frequently complained, and do still loudly complain, of my too great severity; but God knows that in my heart I never hated the persons of those against whom I thundered God's judgment." In no case was he too severe with an individual; and the war that he made upon the persecuting hierarchy he overthrew, and the titled spoliators who employed religion to cover their rapacity, it was impossible could be too energetic or determined. In the whole of his writings may be perceived the philanthropist as well as the reformer, who is surrounded with ignorance, superstition, and crime, regretting the follies he seeks

to check, and sarcastic only when he contrasts the degradation around him with the aspirations on which his mind loved to dwell. In Mary's days of comparative innocence, he might perhaps have made greater allowances for bad education, pernicious example, and for that vulgar weakness of the great which preferred French fiddlers and buffoons to the calls of an expansive philanthropy, or the interests of an empire. But if he erred on the side of principle, it was because on such matters there could be no question of compromise, of hesitation, or delay. His, in truth, was a severe masculine morality, grafted on a vigorous stock. It was not nourished or dandled in the school of expediency, nor did it veer round to the irregular impulses of personal feeling, or the varying gusts of popular applause. He stood against the people and the court, alike indifferent to the rude shock of democratic violence, or the fiercest outburst of royal indignation; and the same uncompromising patriot who could, at the foot of the throne, explain the doctrine of just resistance to oppression, could rebuke with equal energy the "rascal multitude" who pushed the principle to unbounded license.

The claim of Knox to our gratitude, or his title to infamy, must, however, be determined on far other grounds than the harshness or melody of his style. He was certainly one of the most conspicuous men of the sixteenth century. Born at a period of wealth-and-rank idolatry, the son of parents so obscure that industry cannot trace them, he raised himself by the native vigour of a determined will, to a position which enabled him to influence the destinies of his country. Birth, station, profession, temper—all were against him; but in spite of every obstacle, he maintained to the last the nearly unbounded influence he had acquired, and was followed to the grave by mourning thousands, who saw in him the rare picture of the whole masculine virtues of constancy, fidelity, fortitude, and magnanimity.

Peace to his ashes!—Honour to his memory! When we think of Scotland at his birth, and as he left it, we are lost in wonder at the change. The people he found in the infancy of their civilization—rude, barbarous, and untutored—rotting under the bad husbandry of misrule—gross and ferocious—often changing their masters, but never their condition—and, like the Romans in their last decline, as they had outlived the reverence for their religion, they freed themselves from professing any. The resources of the country were wasted in ruinous wars; religion was a plaything of fantastic show or public mummery, embodied in an institution having bulk without solidity—with gilded pinnacles at top, and foundations worn away. Its feverish animation when the struggle came, created awe, from the here-

ditary associations it possessed, and the prescriptive reverence it so long enjoyed. But its last activity was only to render its fall the more decided; and it sunk without one among the people to sing its requiem. Neither its ministers, nor any of the population it kept in ignorance, knew anything of the learning which civilizes and refines the world—the arts that instruct, or the manufactures that enrich it. There was, in truth, no one single institution, principle, or system, that had any foundation in the affections of the people, or which, being in unison with their habits, might have been permitted through custom. Unity of feeling only existed in the people to find relief to misery by revenge; and Knox appeared upon the stage when the utter corruption of all morals, and the destruction of all social virtues threatening the total dissolution of social life, announced the approach of a time, in which a tottering society would right itself, by one of those convulsive changes in which history makes ridicule of fiction, by assorting new and strange destinies to mankind.

In the quiet solitude of Geneva, Knox descried the coming change, and with his usual decision he hurried to the scene. He was just the man peculiarly suited to the times. His actions bore the stamp of a far-reaching sagacity. A leader was necessary to give coherence to popular feeling, and to prevent it being frittered away in painful, disjointed, and fruitless effort,—to inspire a young nation with courage, and to mould them by fostering watchfulness into a reflecting people. Let us do justice—bare justice—to the men who effected the Reformation. After that event, we read less of the commission, and more of the punishment of adulteries, and the many crimes that occupy the attention of magistrates and the hundred mouths of scandal. We find a people from whom complaint was universal,—who had lost their independence and even buoyancy of spirit,—the manners, the character, the habits of a free people, elevated at once to a position, from which they could look proudly around on the depression of continental serfs. The orgies of superstition were followed by the celebration of the mysteries of that religion, which they left to a late posterity. They established schools, and purified our colleges; and learning, which had hid itself in long retirement, came forth from its inglorious retreat. Out of the grave of fallen superstition and ruined barbarous philosophy, emerged a gentle spirit, which amalgamated a society convulsed, and created institutions harmonious in their parts, simple in their pretensions, and pure in their character, which still exist, as living testimony to the just and philosophical foundation on which they rest.

The placid stream which now flows in a gentle current, bearing on its breast the fruits of an enlightened freedom, had once

been scattered in fruitless waste in a thousand rills. To direct their powers to a right convergence, was the duty to which the Reformers in resigning themselves, acquired their honourable immortality. It may be true, that in the herald's college they have no blazonry of arms, and their labours cannot therefore extract from sentiment a word of commendation, or their sufferings cause one tear to flow. But they had a pedigree to render them illustrious, and descendants to keep their spirit in existence. They could point for ancestors to the picture gallery of the wise of past generations, who had preceded them in rescuing mankind from the degrading thraldom, by which priests and kings, or the prejudices of a people, have kept in bondage human thought; and for descendants, they will find myriads ready to defend their memory when maligned. The degradations they suffered, were neither caused by forfeiture of public confidence or public affection; they were neither courted by folly or merited by crime; they arose from that iniquity of fortune, which, in the mixed lot of human life, will attend the best of actions, and which, endured with patience or met with fortitude, become the visible rhetoric of their virtues.

It was through them that the happy change came over the moral and mental character of society. Through their instrumentality the universal law of decay, which makes establishments, like life, decline, and whose corrosive influence was gnawing away the vitals of the commonwealth, yielded to the medicinal influence of a better system, which has given us so much healthy feeling, many centuries of ever increasing prosperity, the civilizing influence of literary and commercial greatness, and enabled us to outstrip the nations of the world in all the essentials which constitute a country's happiness. And yet the change was accomplished within the compass of a single life, by a people arriving at maturity, without the dull season of probation, or the inconveniences of adolescence.

Mr. Tytler, in drawing the character of Knox, has no sympathy with moral greatness. He feels not the high supremacy of the virtue of adherence to truth, amid the sneers of friends, the depression of exile, or the terrors of persecution. His heart is cold to the heroism of principle. He cannot appreciate the scene, when the humble minister confronted the Privy Council, deriving additional lustre from his intended degradation, and shewing us how a great man may be ill-treated, but not dishonoured. For the ruin of rank, and beauty, and ancient name, he excites our sympathies, and invokes the full volume of our compassions and our sorrows. He changes the accuser into the accused, and inverts the morality of actions, to obtain a judgment consistent with his prejudices. "On many occasions," he

tells us, "Knox acted upon the principle (so manifestly erroneous and unchristian) that the end justified the means."—(Vol. vii., p. 331.) In vain have we read the History for occasions when he is said to have exemplified the principle, except the death of Rizzio; and in vain will Mr. Tytler urge that charge again upon a startled public. He will deal with it, as he did with his attack on the memory of the martyr Wishart, whom, in an early work, he accused as accessory to the death of Beaton—a charge which in his history he has abandoned, or frittered away in insinuation, which carries with it its antidote; and there we leave it. But he farther tells us, that Knox was "fierce, unrelenting, and unscrupulous."—(Vol. vii, p. 331.) Fierce and unrelenting he ever was—but nothing more than a good man ever must—against any thing that had the appearance of the conventional moralities of Mr. Tytler's heroes, or the crimes of which his heroine was accused. But that he displayed such feelings, as is intended to be conveyed, against what was right, is a charge which not one among the thousand calumniators, who have exhausted their time in invective and investigation, can place upon other authority than their own assertion. In the like spirit we meet the charge of being unscrupulous, which, resting as it does in the vagueness of generality, may be safely left with a general contradiction.

Nine-tenths of the Scottish people will read such things with indignation, and—were it not for the high respectability of the author—with feelings of contempt. They will find some palliation for them in his hereditary prejudices. They will consider it natural enough, that one who has worked eighteen years amid the mouldering records of other days—without being able, after all, to see the importance of that Reformation, which renders its history interesting not only to Scotland, but to mankind—has no sympathies with the recollections of departed worth, which shone out in a high and single-minded philanthropy to the last. They will look upon the author's performance, as they would upon any other of a school, which speaks any language of religion and morals consistent with the innocence of Mary and the infamy of her accusers; and when the interest attached to a new publication, by subsiding, shall have allowed this history to sink to its place of rest, the author will find, to his regret, that his fierce invectives have ruined nothing but the fame he is so anxious to acquire.

Far be it from us to act as the indiscriminate eulogists of Knox. Let his faults be censured with unsparing rigour, but let not his generous sacrifices and his manly courage be forgotten. In condemning justly the severity of his language, let it be remembered that it was a common failing, into which even Erasmus fell; and

in an impartial estimate of his character, do not omit the loveable nature of the man—his humour—his vigorous human-heartedness—the absence of all cant, or affectation, or maudlin extravagance—the utter want of all selfishness, which made him decline a bishopric from the best of princes—and his Christian humility, though the correspondent and friend of monarchs and their ministers. Do not sink into oblivion the fact, that flattery could not diminish his perseverance; that threats increased his ardour; that hatred, obloquy, and scorn—from power, that had the instruments to avenge—from friends, whose attachment was the first object of his affections—and from "his very familiars," whom his generosity had enriched—were the result of the sacrifice to duty; how he knew the cost, and, to the eternal honour of his memory, paid it to the full.

An impartial writer would narrate how, in the grand carnival of the age, strange masquerades were seen. It was through the Reformer's influence that feudal enmities disappeared—ancient party shibboleths were forgotten—ancient enemies resigned their hatred. The people heard—became convinced—and, by their actions, told the sincerity of their convictions. All former contests were cast aside; all the past wrongs of clanship, transmitted from age to age as a family inheritance—all the license of a demoralized society—were swept away in the new current of enthusiasm, which left the deserted churches of popery, the funeral mementos of departed superstition.

We have now exhausted all our space for any particular examination of Mr. Tytler's history. We could have wished, had we been able, to follow him during the reign of James, when the tide of religious fervour had subsided, and the whole power of Government was employed to raise a bulwark against its flow a second time. This, however, we must leave to the judgment of Mr. Tytler's readers, and shall, at present, close our strictures with a few observations on the general characteristics of the later volumes of this History.

In reading the account of the Reformation, its causes and its results, one's feelings of indignation at the perverted narrative yield to an artistic feeling of anger, at the mode in which the author has spoilt so fine a subject. We would have submitted to abuse had it been boldly done; and the history of the Reformation would not have appeared so utterly distasteful if we could find a thorough appreciation of its importance, whether for good or evil. But the historian seems entirely to have overlooked it. He gives us a few biographies, and forgets the history of a people; and the parties honoured are, of course, the illustrious who had handles to their names. It is absolutely amazing,

with Robertson's introduction to the history of Charles V. before him, how he missed the finest subject for historical dissertation yet left to modern industry. What a noble chapter it would have made, if, instead of all this rubbish of quotation from the letters of Lord Mighty and the Duke of Craft, and the Queen of Policy, he had patiently set himself down to inform us of the state of social existence, and religious feeling and learning, in the eventful years which preceded and followed the Revolution. How interesting it would have been had he followed the example of Robertson with regard to the state of Germany in the days of Luther; had he taken each class of the community and told their story—the private lives of the clergy, for example—their virtues or their venality, their ignorance, their profligacy of manners, their persecuting spirit. How admirably he could have displayed his learning, and amused his readers, by entering their libraries and giving us a peep of the foolish literature lying there; or by introducing us to the conversation of these gross and lazy priests, who slumbered and woke to eat and drink and slumber again. His readers would have laughed with him at their mutual accusations and recriminations; and following them into their private chambers he could have told us many a moral lesson from their secret doings. People are never so wicked as during a general mortality, or the ravages of the plague; and sailors get drunk as the vessel sinks. Hence the numerous incidents such as that which marked the close of the Popish Bishopric of Aberdeen, in which the holy bishop accused the Chapter of lukewarmness towards heresy, and they retorted by calling upon him to cause his churchmen "reform their shameful lives, and remove their open concubines;" and more especially that he, the Apostolic Father himself, "would have the goodness to show an example by abstaining from the company of the gentlewoman with whom he was greatly slandered."—(Keith, *pref.*, p. 11.) Nay, it might not be uninteresting to add a sketch of that most consummate of Popish abominations, auricular confession; and the clamorous canon of a provincial council might be quoted, wherein the confessors were directed to hear the penitent patiently, and not to look too often in the face, particularly if a woman.* He could have added, at the same time, a short account of the mode of generation of new saints, and the concoction of holy relics; and a graphic narrative might be given of the mode in which the humble votaries at the many shrines gazed with wonder at the priestly jugglers, deposited

* "In audiendo confessionem, sacerdos habeat vultum humilem, et oculos ad terras demissos; nec sœpius indiscrete faciem respiciat confitentis, et maxime mulieris."—*Can. 76 of the Canons published by Hailes.*

their offering before the image, received a nod from it, and in pious ecstasy retired. Of all this, however, there occurs not a single word; and one, after the perusal of its history, will rise with the most dreamy impression of the gorgeous establishment of the old Papal religion, and with no impression at all of the jolly fathers who gave it a "local habitation and a name."

Mr. Tytler is a lawyer, and upon his professional theme it becomes us to be silent. At the same time, the general unprofessional reader cannot help regretting, that many of the interesting events connected with the history of our legal institutions have been sunk into oblivion. We might, with advantage, have received some information in regard to those dens of iniquity, termed Ecclesiastical Courts, in which the clergy administered "justice," and gathered their tithes, and taught the learned out of an immense book of laws. The subject could have been made amusing, by a few of the *causes célèbres* they decided; and the historian would have found, that the history of private morality and oppression, as there exhibited, would have reflected a far brighter light on the condition of the country, than the most horrific murder story he has told us.

By an easy and natural diversion, he could then have introduced us to the Civil Courts, and given us some idea of their constitution and their privileges, rendered interesting by a few anecdotes as to their corruption and venality, so highly prized by the old barons who hated Cromwell's Commissioners, because "they had no natural feeling, and decided all the same, though one of the parties were of their kith and kin." The nature of the government of Scotland might also have received a passing notice. Some information could have been afforded as to whether there were Officers of the Crown—a Chancellor, a Secretary of State for the Home Department, and one for Foreign Affairs, one for the Borders, and another for the Highland reivers.

Was there not, too, a common people in that perished age, and had they not a history, like the lords and ladies, of whose doings these nine diffusive volumes are the industrious record? They appear, in the historian's estimation, to have been born of oblivion, and destined to oblivion; and their names make no figure in history. Still, it would have been interesting to know, if the blood warmed their hearts, and if they spoke and felt as did the great. In what manner did Donald MacIan Mhor, in the far north, amid the mists of his native hills, wear away the dull monotony of life? Was he clothed in sheep-skins, and did he live by sheep-stealing? Were there wise men, and magicians with the second sight, hard by the Tummell or the Spey, and was that the native land of whiskey then? Farming, too, was in use surely, in these old days; but we cannot extract from Mr.

Tytler, whether our worthy fathers, in the patriarchal style, employed bullocks for the plough, and trod out the corn by the feet of oxen. O! that he had kept in mind the saying of the worthy gentleman, commemorated in the Voyage to Brobdignag, when unravelling his everlasting court intrigues,—"He gave it for his opinion, that whoever could make two ears of corn, or two blades of grass, to grow upon a spot of ground where only one grew before, would deserve better of mankind, and do more essential service to his country, than the whole race of politicians put together."

Or, if we come to the Lowland towns, where dwelt the substantial burghers, plying the busy industry of their respective crafts, why will the historian not tell us something of their quiet happy existence? They courted, surely, and they married; and sometimes they committed crimes, and as often exhibited generous and noble virtues, as the proudest high-born Hidalgo of them all. Were shirts, and shoes, and stockings, among the luxuries, or the comforts merely, of burghal existence? What an interesting story has Guizot, in his history of European Civilization, contrived to rear out of the prosaic existence of the denizens of the cities, who stand amid the gloom of the middle ages, as something superior to the brutality and ignorance of the times; and how admirably does he follow them to their workshops, and to the bosom of their domestic affections, contrasting their happy comforts with the squalid greatness of the roistering baron, whose castle overtopped their city or their hamlet.

The subject is, however, too mean for the Scottish historian, who is above telling us anything of the manners, habits, pleasures, trades, feelings, opinions of this busy, persevering, and intelligent people; nor will he give any information as to their literature. Here, too, a fine chapter has been thrown to the winds. Oppression, weariness, and disgust with the utter abominations of the Romish faith; convictions as to its falsehood, and hatred to its shameless ministers, were the principal causes of its downfall. But the influence of poetry was brought in to excite the fancy; and the ridicule and sarcasm of Lindsay, and "the gude and godlie ballads," and other productions of the same school, rendered ridiculous what had already been declared sinful. It is said that the songs of Béranger overthrew the elder Bourbons; it is unquestionable that the keen wit of the poetasters, who satirized the priests, effected the strongest impression on the popular mind of Scotland. Yet all that is said upon this subject is contained in three lines—more perhaps than might have been expected; and then the author proceeds to the staple subject of his treatise—the description of a border excursion—some gross oppression, or exquisitely exciting murder. We can scarcely ascertain from this history of

his country, who was Sir David Lindsay, one of the most illustrious men of letters of ancient Scotland; and the man whose works have delighted many a reader, now shines with an obscure lustre, at the side of some feudal ruffian who had exhibited the superlatives of inhumanity. Gavin Douglas, the Bishop of Dunkeld, the translator of Virgil and part of Ovid—a gentleman—a scholar in the highest sense—a poet who has left descriptive poetry equal to that of any language, is introduced to our notice, not as having immortalized himself by works of genius, but because he had adjusted a squabble between two of the mighty lords. It is, moreover, scarcely conceivable that Mr. Tytler should have spent so many weary pages, in quoting the twaddling scandal of the self-conceited, busy, prying, impertinent English resident, Thomas Randolph, and left unnoticed the labours of William Dunbar, the greatest of the original poets of old Scotland, who, according to Warton, "adorned the present period with a degree of sentiment and spirit, a command of phraseology, and a fertility of imagination, not to be found in any English poet since Chaucer and Lydgate."

We need not name others. They have all been contemptuously left in the obscurity of their antiquated phraseology, and their country's historian will not condescend to tell us anything of their language and ours. There never was a history which has acquired such a name as this, so defective upon nine-tenths of the subjects necessary for its construction. Materials, too, lie at hand in inconvenient abundance, for enabling the historian to unroll the history of that world of old, the habits and customs of our fathers, their literature and their religion, their language and their origin, the humble destinies of perished generations, whose hum of busy labour we would hear again, mingling with the chant of the monkish *miserere*. By judicious compression all this might be contained within such a compass as not to extend the work a single page, provided a number of inhuman atrocities were left out, and only a few retained as examples of the rest; and also under the condition, that two or three hundred of the five hundred pages of dull quotation from State Paper Office correspondence, were consigned to the obscurity from whence it has been dragged.

Mr. Tytler expresses his gratitude to Lord Melbourne for allowing him "a full examination of the Scottish correspondence in the State Paper Office," and which he tells us was an event "the most pleasurable in my literary life."—(Vol. v., p. 377.) We cannot express the same gratification. There can be no doubt, that several Court intrigues have been thereby divested of their mystery; but, in opposition to that, we have to set a deluge of matter, on uncontroverted points, told with amazing periphrasis of phrase, to the utter exclusion of half our history. To adopt

the simile of Burke, the historian seized a handful of grasshoppers, which he presents as the riches of the land, while altogether unmindful of the noble oxen quietly browsing around him. Like any other collection of old correspondence, this book will, however, be useful, and it is needless now to continue our wailings as to its omissions. But if, instead of denominating the four last volumes a history, they were described as the biography of Mary Stuart, of Regent Murray, and of Morton, interspersed with sketches of other grandees, and solemn denunciations of the coarse vulgarity and intolerance of Presbyterian ministers, a better idea would be entertained of its character and its object.

This is our History! We grudge not the author the pension it has gained him; he will, perhaps, never receive either from his pension or his profits, remuneration for his labour of eighteen years. It is, therefore, all the more galling to his friends, that we cannot recompense him by our admiration and our gratitude, and are driven to the painful conviction, that the History of Scotland remains to be composed.

ART. II.—*The Entire Works of the Rev. Robert Hall, A.M., with a Brief Memoir of his Life*, by Dr. GREGORY, *and Observations on his Character as a Preacher*, by JOHN FOSTER. Published under the superintendence of OLINTHUS GREGORY, LL.D., F.R.A.S. London, 1832.

WE do not think the method that was at first adopted to perpetuate the memory and the fame of Mr. Hall by any means judicious. We have a memoir by Dr. Gregory, a character of him as a public man by Mr. Foster, several distinct sketches in pages and half pages by Anderson and others, and subsequently a more elaborate life by Morris, reminiscences by Greene, and various minor contributions, having more or less of merit; consequently, everything relating to him is given in such a piecemeal and fragmental way, that we have neither the pleasure nor the instruction of one masterly and continuous narrative. Gregory's is pleasant, Foster's profound, Morris's heavy, and Greene's frivolous. Scattered and various as these performances are, after the lapse of many years it seemed to us desirable to recall the image of departed greatness in a condensed form, with such new circumstances as personal knowledge might enable us to record, and affection embalm, assured that contemporaries will

never be weary of a subject so cherished, and that the coming age cannot be furnished with many of more instructive and enduring value. What is most truly characteristic often vanishes with the life, which, like the setting sun, leaves only the radiant twilight for a time. To perpetuate these traits, and imprint them for contemplation on the page of a faithful, however abbreviated, narrative, is a grateful task, and not, we trust, unprofitable.

Men of great talent are said seldom to have clever sons; but to this rule the present instance furnishes an exception. The father of Robert Hall was a distinguished minister of the Baptist persuasion at Arnsby, a small village near Leicester; and the more than ordinary resemblance between them, both in the conformation of the head and features, and the order of their mental faculties, might afford some assistance to the dubious in the verification of physiognomical science. Robert (born at Arnsby May 2, 1764) was the youngest of fourteen children, and, in infancy, the feeblest, though afterwards his frame and constitution bordered on the athletic. He was once given up for dead in the arms of his nurse; and it was long after the average time for children before he could walk or talk. In the former faculty he was never a proficient—in the latter he soon became remarkable. Even at a very early period, as we have been informed by those who had the means of knowing, he would frequently entertain the haymakers in the hours of toil, and during their meals, by a conversation rich in sensible observations and sportive sallies, which secured their admiration and love. Happily the precocity of his talent was exempt from the usual fatality of premature extinction. Even at nine years of age he could not be restricted to the narrow limits of village school instruction, but had read and reflected on Butler's Analogy, and Jonathan Edwards's Treatises on the Affections and the Will. This metaphysical bias he himself attributed to an intimate acquaintance with a humble tailor at Arnsby, whom he represented as a very well informed acute man. From our knowledge of him in after life, we should rather be inclined to say that the dialectical skill and tendencies were in the child, for whom it was sufficient to find a willing listener in the tailor; for it is often characteristic of great and generous minds, to attribute to others as native excellence what in fact is only seen as reflections of their own.

His first tutor informed his father, when his son was only eleven years of age, that he was unable farther to instruct his pupil; and accordingly, after a short interval, he was taken to the boarding-school of the Rev. John Ryland of Northampton, with whom he remained only a year and a-half. The genius of Ryland (the father of the late Dr. Ryland) was of a kind

well calculated to stimulate his son; nor was it unallied to it in bold conception and eccentricity. In the latter respect, however, his tutor was a meteor of wilder range and fiercer blaze.

In September 1778, he became a member of his father's church, and having given satisfactory proofs of piety and of predilection for the Christian ministry, he was soon after sent to the Bristol Academy, whence, after three years, he was transferred to King's College, Aberdeen. While at Bristol he was highly appreciated both as a student and a speaker. What he did and wrote uniformly bore the stamp of originality; and his occasional efforts at Arnsby, Clipstone, and Kettering, during the vacations, excited great interest and won him much admiration.

During his college pursuits at Aberdeen, the professors of that period gave the strongest testimonies to his proficiency in the various branches of classical, mathematical, and philosophical study. At the close of his fourth year, he delivered a Greek oration, which obtained for him much local celebrity, and this was followed with the honorary degree of Master of Arts. At Aberdeen he became associated, as well in intellectual pursuits as in close friendship, with Sir James Mackintosh. These eminent men ever after retained for each other sentiments of the highest consideration and attachment. They were so marked at college for their unanimity and attainments, that their class-fellows would often point to them, and say, "There go Plato and Herodotus."

We have not, in the present instance, to contemplate genius struggling amidst counter-working agencies, and making its way notwithstanding the difficulties; but rather the happy results of a combination of favourable circumstances eliciting and perfecting its powers. That Hall would have surmounted obstacles of no ordinary kind cannot be questioned; but he was not called to the trial. Under the paternal roof he had the advantage of talent and experienced wisdom to guide his early way; at the boarding-school he was still powerfully impelled forward by kindred genius and an exalted moral influence; in the Bristol Institution he enjoyed the tutorship of Hugh and Caleb Evans, both of them distinguished in their day; at Aberdeen his mental habits were strengthened by the companionship of Mackintosh. Having imbibed a taste for literature and a turn for metaphysical inquiries in these several schools of instruction, not to forget the books he first read, and the intercourse he held with the celebrated tailor at Arnsby, he was providentially preparing for that literary and public career to which he was destined, and which he was by nature adapted to occupy. The bracing effect of that rivalship, and of those friendly discussions in which he and Sir James were wont daily to engage, in their wanderings by the shore or in the fields, was, to one of his order, like the tighten-

ing of the strings of a musical instrument, which, when wound up to the right pitch, was hereafter to pour forth strains of powerful and enchanting melody. Sir James declared of himself, in a letter to Hall, at a distant period, that "on the most impartial survey of his early life, he could see nothing which so much tended to excite and invigorate the understanding, to direct it towards high, and perhaps scarcely accessible, objects, as his intimacy with his honoured friend." Examples of this description have a strong relation to the question, whether genius be an innate and original constituent of the mind, or whether it be only the calling forth, by means of proper cultivation, the rudiments of thought, or the seminal principles of mental superiority, which may be supposed inherent in all rational natures. It is hard to conceive, however, amidst innumerable failures, that mere diligence, attended by whatever advantages, would work out such stupendous results.

At the close of 1783, Mr. Hall received an invitation to become assistant pastor with Dr. Caleb Evans, at Broadmead, Bristol. It was agreed, however, that he should return to his studies in Scotland during the college session of 1784-5. On settling at Bristol, his preaching elevated him to the height of popularity, being the evident product of a mind of extraordinary vigour and cultivation; yet was it deficient in evangelical richness—a circumstance which none afterwards so deeply deplored as himself.

In August 1785, he was appointed classical tutor in the Bristol Academy, a situation which he held with great reputation for more than five years. A painful misunderstanding with Dr. Evans, and some differences of sentiment with the Church, at length facilitated his removal to another sphere of labour. He was invited to succeed Robert Robinson at Cambridge, and went thither in July 1791. From that period, we are informed by one of his hearers, the congregation gradually increased, till in a few years the enlargement of the place of worship became necessary. Members of the University frequently, and in considerable numbers, attended in the afternoons on his preaching. "Several senators, as well as clergymen of the Established Church, received their first lessons in eloquence from his lips."

The progress of the French Revolution, which shook the very foundations of society in England by splitting it into political divisions of opinion, did not more violently agitate any place in the kingdom than Cambridge, which was prolific in controversial pamphlets and social conflicts. Hall's ardent mind became inflamed, and, urged on by a circle of intelligent and active friends, he was induced to resist his natural disinclination to writing, and produced a large pamphlet, under the title of "An

Apology for the Freedom of the Press," which, though composed with rapidity, was full of power, and secured for him much distinction as an author. This early essay is characterized by a manly avowal of liberal principles, communicated in language at once forcible and beautiful, thundering with energy, and lightening with flashes of brilliant eloquence.

The next publication laid the basis of his lasting celebrity as an author,—his discourse on "Modern Infidelity." Independently of its intrinsic excellence, there were several circumstances which contributed to its popularity. It was remarkably well *timed*, and answered a pressing necessity. Between the years 1795 and 1799, many debating societies were formed in London, to which the lower classes were allured on the Sunday evenings, under various pretences, and which became in a short time the nurseries of infidelity. The leaven of impiety spread, and he had reason to fear that not only was the country becoming infected, but that the young among his own people were tending to scepticism. This grieved his pious spirit, and roused into exertion his utmost talent. He first delivered this sermon at Bristol in 1800, and then at Cambridge. His own view of the case is thus expressed in a preface :—

"To obliterate the sense of Deity, of moral sanctions, and a future world; and by these means to prepare the way for the total subversion of every institution, both social and religious, which men have been hitherto accustomed to revere, is evidently the principal object of modern sceptics,—the first sophists who have avowed an attempt to govern the world without inculcating the persuasion of a superior power."

He intimates that it is the immaculate holiness of the Christian revelation which is precisely what renders it disgusting to men who are determined, at all events, to retain their vices.

"The dominion of Christianity being, in the very essence of it, the dominion of virtue, we need look no further for the sources of hostility in any who oppose it, than their attachment to vice and disorder. This view of the controversy, if it be just, demonstrates its supreme importance, and furnishes the strongest plea with every one with whom it is not a matter of indifference whether vice or virtue, delusion or truth, govern the world, to exert his talents, in whatever proportion they are possessed, in *contending earnestly for the faith once delivered to the saints.*"

Another circumstance which contributed to the popularity of this discourse was the extreme virulence of an attack in the "Cambridge Intelligencer," in several letters by Mr. Flower its editor, which were written, as was generally believed, in resentment for the friendly advice of Mr. Hall to alter the tone of his

political disquisitions. About the same time, another attack of equal virulence was made by Mr. Anthony Robinson, in a separate pamphlet. On the other hand, it was lauded by the most distinguished members of the University, celebrated by Dr. Parr in his "Spital Sermon," extolled by individuals of literary eminence, and especially praised by Sir James Mackintosh in the Monthly Review, and privately circulated by him, to some extent, among his Parliamentary friends. All this, however, would have been unavailing to give it permanent influence, and its author superior fame, had it not possessed extraordinary merits. In truth it can never be read without profit, and can never perish while the language lasts.

Within a comparatively short period Mr. Hall published two other sermons, remarkable also for their display of talent, and their critical adaptation to the times; namely, "Reflections on War," and "The Sentiments proper to the present Crisis." These will be lasting records of his genius, though the exciting occasions of them have passed away. The few other sermons from his pen, excepting that on the death of the Princess Charlotte, had relation to more private events, though of the deepest interest and importance,—as "The Discouragements and Supports of the Christian Minister," a "Funeral Sermon for Dr. Ryland," with some others. Besides these, he published many miscellaneous pieces, and some controversial writings; but it is not our design either to enumerate or analyze his works. There is not one of them, even the very earliest, that has not his peculiar stamp, the impress of his original mind; and in general they exhibit a remarkable uniformity of excellence, arising, as we believe, from the nice balance of his intellectual powers, the discriminating accuracy of his taste, and the abundant *labor limæ et mora* which he invariably bestowed upon all his productions.

Mr. Hall had always been a great sufferer from a pain in his back, which generally compelled him to recline on sofas, benches, or two or three chairs united, for hours together in a day. This affliction very much increased in 1803, so as frequently to deprive him of sleep, and produce very serious depression of spirits. He was advised to reside some miles out of Cambridge, and only repair thither when officially required. This plan of alleviation was not, however, altogether successful, and the mental malady placed him, in November 1804, under the care of Dr. Arnold of Leicester. In April 1805, he was so fully restored as to be able to resume his ministerial labours at Cambridge, but he lived nine miles from the town. This procedure was injudicious; the seclusion was too entire; and in twelve months another eclipse of reason rendered it necessary to obtain a second course of medical superintendence at the Fish Ponds, near Bristol. It also com-

pelled his resignation of the pastoral charge at Cambridge. These severe visitations were instrumental in perfecting his religious sentiments, and his religious character. His own impression was that he had not undergone a thorough renewal of heart till the first of these seizures. We should hope it was otherwise, and are disposed to believe that his habitual low estimation of himself deceived him on this subject.

After this second recovery, he resided for sometime at Enderby, a retired village in the neighbourhood of Leicester. While there, the author of this article, who was on a visit to him, saw striking displays of his peculiarities both of body and mind. With regard to the former, his temperament was singularly cold and impenetrable to the elements. While sitting together for some hours in a very small parlour, which he had heated by a heaped up fire, and filled to suffocation with the smoke of his favourite tobacco, he suddenly exclaimed,—"Well, sir, perhaps *you* would like a little air." Then throwing open the window, he deliberately walked round the garden several times without his hat, though he was entirely bald, and while the keen blast of a November afternoon was cutting the flesh like a knife. At an expression of surprise at this endurance both of the heat and the cold, he said, "Why, sir, as to the weather, I am not at all affected; I could undertake to walk both uncovered and barefoot from here to Leicester (five or six miles,) without taking cold. As to the fire, sir, I am very fond of it. I should like to have a fire before, and a fire behind, and a fire on each side." Whether the yet unsubsided irritability of his mind might not have exercised some peculiar influence over the physical nature to produce these phenomena, must be left to physiologists to determine; it is certain they existed.

On the ensuing morning, he referred with great interest and emotion to the celebrated article against Missions which had recently appeared in the *Edinburgh Review*, and said that Mr. Fuller had very much urged him to undertake a reply.—"With some difficulty, I yielded, sir, to the solicitations of such a man, and for such a cause. I have, in fact, written about twelve pages; I should like your opinion thus far: will you permit me to read them to you?" He did so; and if memory do not deceive, the power of the argument, the brilliancy of the wit, and the elegance of the diction equalled, if not surpassed, any of his compositions. Yet with all characteristic humility he said—"I think, however, Andrew Fuller would have succeeded better in his way. I wish he had done it himself; but I could not persuade him. I think I can't finish it now." So it proved. The document is lost, and probably shared the fate of some of the finest productions of his intellect—that of lighting his pipe!

During his residence at Enderby, Mr. Hall frequently preached in the surrounding villages, and occasionally at Harvey Lane, Leicester, the scene of Dr. Carey's former labours. With the people of this congregation he ultimately associated himself as minister in 1807, and this connexion continued unbroken for nearly twenty years. These were probably the happiest of his life, for in addition to his domestic enjoyments, (he married in 1808,) the attendance on his ministry increased from three hundred to a thousand, with manifest tokens of public usefulness. Without abating in his direct pastoral exertions, he was excited to increased activity in promoting Bible, Missionary, and other important societies. It was here the great luminary rose to its meridian splendour, and diffused abroad its most benignant radiance. "Churchmen and Dissenters; men of rank and influence; individuals in lower stations; men of simple piety, and others of deep theological knowledge; men who admired Christianity as a beautiful system, and those who received it into the heart by faith; men in doubt, others involved in unbelief: all resorted to the place where he was announced as the preacher." During this period, also, were issued several brief but beautiful publications.

On the death of Dr. Ryland, he was invited to succeed him in the pastoral office at Broadmead, Bristol, to which request, after frequent and painful revolutions of feeling, he finally yielded, believing that he was providentially called to this change of his ministerial sphere. Here he attracted great attention, as in other places, though his powers were perhaps a little enfeebled by advancing years; while the happy association into which he was introduced with ministers and laymen of all denominations, and the stimulating effect of those delightful reminiscences which sprung up amongst a few remaining friends of his early life, tended to re-excite his energies, and to shed sunshine over the descending path to the tomb. He still gladdened society by his visits, and pursued his own pleasure and improvement by reading. His favourite classical writers were his frequent resort, while his devotional spirit renewed its vigour by enlarged draughts at the fountain of inspiration. Of the commentators, Matthew Henry was most prized, and daily read in considerable portions. He continued also to practise occasional fasting, which he had begun at Leicester, according to his own testimony, with the greatest advantage. His religion seemed to run parallel with the increase of his personal sufferings, which were progressively severe, especially as he became plethoric and his old complaint in the back strengthened with his decline. A temporary absence at Coleford, in the forest of Dean, appeared to recruit his health, but the effect was of transient duration. He had frequent spasmodic affections of the chest, and immediate dissolution was threatened on the 1st of Ja-

nuary 1831, but it passed off, leaving apparently on his mind more impressive sentiments of the coming eternity. With these, all his subsequent public addresses were deeply imbued; till he engaged in his last service, which was a church meeting, on the 9th of February. On the next day, he had just retired to his study to prepare his usual monthly sermon, in anticipation of the approaching Sabbath of communion, when he was seized with the first of the series of paroxysms which terminated in his death. This solemn event took place on the 21st of February 1831, at the age of sixty-six.

In some of the more private virtues of life Robert Hall was unsurpassed. Of these we do not recollect having seen his *humanity* particularly noticed, though it was in reality a very striking feature of his character. It resulted alike from the benevolence of his affections, and the extreme sensibility of his mind. Two specimens of this are in our recollection at this moment:—The one in the way of resentment, the other of compassion. A certain popular minister in his circle occupied a piece of pasture land attached to his house, in the fence of which a poor sheep had entangled its head, having obtruded it between the rails, without the power of extricating itself. This man, who was excessively choleric, beat the animal until it expired; for which barbarity Hall never could forgive him; and no efforts at reconciliation, though repeatedly attempted by mutual friends, could ever succeed. While the barbarity would doubtless have prejudiced most minds, his acute sensibility for the speechless sufferer led him to treat it as a kind of personal offence to his nature. The other instance was one in which he was endangered by the fall of a horse. The friend with whom he was travelling expressed much anxiety as to any injury he might have sustained, but could elicit no other answer to his repeated questions than—"Poor animal! is he hurt, sir; is he hurt? I hope, sir, the poor horse is not hurt." This was no affectation of kindness; he had too much genuine simplicity of character to render that possible: it was the outpouring of an exquisite sensibility.

To the same general principle may be referred his *politeness*; which was not in him an obedience to the conventional laws of society, but the dictate of a mind alive to the circumstances of others, and a heart full of feeling. He had learned of the Apostle to be "courteous," in the most exalted sense of the term; and always repaid the smallest offices of kindness with exuberant expressions of gratitude.

Considerateness was a remarkable trait of his character. In fact, it was sometimes almost ludicrously punctilious. Among many proofs of this with which the writer of this article was fa-

miliar, he will mention what occurred on one occasion when he accompanied him on a journey to the North. The travellers had taken up their abode at an inn, and while discharging the account the next morning, he said, with some earnestness—"Pay that man a penny, sir, for me." The astonishment and the smile may easily be conceived. He persisted; adding, "I will tell you how it is, sir. I usually burn a rushlight, but forgot to mention it, and being late, I did not choose to disturb any one. So I burnt out the candle, which I am sure was at least worth an extra penny, upon which the landlord could not calculate." This might seem to be a trifling incident, but as indicative of character, deserves to be recorded. Another of a different kind was connected with it. When approaching the town in question, he said—"Now, sir, a very excellent Independent minister resides here, but he is poor. He cannot afford to entertain us, but we should be pleased with his company, and ought, I think, sir, to show him respect. Besides, he would be grieved to hear that we had been in the town, and never thought of seeing him. With your permission, we will secure our beds, order what we should like, and then send to invite him to sup with us at the inn. And there, sir, it is not improbable, some of his friends will have found us out, and we will accept any invitation to breakfast in the morning, where the worthy man will, no doubt, be invited to meet us, and thus he will be spared, and we shall all be gratified."

The *humility* of Hall has been expatiated upon by all who have attempted to describe him. It was, however, humility unallied with ridiculous self-depreciation, and totally remote from every thing like cringing sycophancy. It cannot be supposed that such a man was insensible to his own mental superiority; and in truth the consciousness of it was at times displayed incidentally, but never pompously. Though he would in general repudiate applause, yet there were occasions when he would receive it with an apparent satisfaction. He would frequently inquire of his intimate friends what they thought of his discourses immediately after their delivery; but his manner of doing so, would rather indicate an inward sense of unworthiness and insufficiency, than a desire to obtain approbation. In addition to his own experience, the writer has often heard the late Mr. William Hollick of Cambridge, state, that he usually walked with him to his lodging in St. Andrew Street, on the Sunday morning after service; when Mr. Hall scarcely ever failed to put the question—"Well, sir, what did you think of my sermon?" Mr. Hollick soon discovered, that he almost invariably disagreed in opinion; and often expressly put him to the test, by veiling his own real sentiments. Thus, if Mr. Hollick expressed a high estimate of

the discourse, he would say, "No, sir, I don't think you are right. I think nothing of it; I was not so much at liberty as I could have wished." If the contrary sentiment were uttered, he would say in a half-jesting manner—"Pretty well, sir, I think." These conversations evinced considerable sensitiveness; they also shewed that he had made a tolerable estimate of his own powers; but connected as they were with evident manifestations of piety, they also proved that he was intensely concerned, not so much about his personal reputation, as for the moral and spiritual effects of his ministry. A little incident that has come to our knowledge, affords a further display of this part of his character. A brother minister had on one occasion heard him preach with peculiar satisfaction. A considerable time afterwards he met him; and having a vivid remembrance of the discourse in which he had been so interested, took an opportunity of adverting to it in terms of ardent eulogy. Instead of receiving this approbation with a self-sufficient air, he replied—"Yes, sir, yes; the Lord was with me on that day." But whatever he might occasionally seem before man, (and then even in his most unbent and joyous moments, a person must have had a keen eye indeed who could have detected the little arts of vanity and self-exaltation), his humility appeared to be perfect before God. The simplicity of his expressions, the evident prostration of his spirit, and the fervour of his pleadings in prayer, furnished extraordinary proofs of this characteristic.

We cannot agree with Mr. Foster in the view which he takes of Mr. Hall's devotional exercises, nor indeed with the principle on which his remarks are founded. Mr. Foster appears to have been disappointed because his public prayers did not partake of that intellectual character which distinguished his preaching, but was, as he thinks, the very reverse in respect to concentration and determinateness in the direction of thought; and he "cannot tell on what principle it was that he preferred a manner so different in that exercise from its operation in all other employments." Our conception is, that if his prayers had possessed that character of consecutiveness and intellectuality for which Foster pleads, they would have lost much of their charm and real power. A discourse in which it is proposed to instruct men should be, in our opinion, very different in its general character from the utterances of the heart before God. In the latter case, whatever has the air of laboured preparation, is irrelevant and out of place. Surely one of the great elements of devotion is its spontaneity, its feeling, its simplicity, and, as we may say, its entire artlessness; and we cannot but believe that this vivid conception of the true design of prayer, was the principle in Mr. Hall's mind which Mr. Foster thinks "cannot be

known or conjectured." From this resulted the humble earnestness, the holy aspirations, the awe and the pathos, which characterized his prayers. He, in a sense, laid aside the man and became wholly the saint, whenever he ascended the mount of communion with God. In preaching, he moved in an element of light—in prayer, in the element of love.

So habitually devout and vigorous was his mind, that he was capable of the most sudden and singular transitions from intercourse with man to intercourse with Heaven. The following is a curious instance of this. Mr. Hall had been indulging in that species of innocent merriment and jocularity to which he sometimes yielded; and in the midst of a very humorous story, the clock struck twelve,—in an instant he laid down his pipe, exclaiming, "Sir, it is midnight, and we have not had family prayer." The next moment he was on his knees, absolutely absorbed in devotion, and pouring forth the most solemn and reverential petitions at the footstool of mercy.

Another instance at once of his religious ardour and filial tenderness, occurred at Arnsby on a visit. It was related to the present writer by one of the witnesses. On his way from Leicester he had expatiated on his father's excellences, and the scenes of his earliest days. As soon as he entered the house in which his father had resided, he hastened into the parlour, fell on his knees, and poured forth the most devout and fervent supplications. The two or three individuals who were near speedily withdrew, that they might not interrupt his feeling. Soon afterwards he went into the burial-ground, and dropping on his knees at his father's grave, with his hands extended over the monumental stone and his eyes closed, he offered up an extraordinary series of petitions. Among these he breathed forth an impassioned desire to "join the blessed company above;" and entreated that he might be "permitted to know his departed father in the heavenly world; and that their united prayers, often presented on earth, might be then turned into praise, while they beheld their 'Redeemer face to face together.'"

His writings sufficiently attest the *liberality of his religious views.* In some instances, indeed, he has expressed himself in terms which will be deemed severe; but he was "a lover of all good men," while he firmly maintained his sentiments as a Dissenter and a Baptist. He cultivated much intercourse with many who differed from him in both respects, and never, it is believed, gave them any real occasion of offence. Sometimes he would indulge in a little sarcasm and raillery at their peculiarities; but his wit was the flash of the innocuous summer lightning, attracting rather by its beauty and playfulness, than injuring by its stroke.

He was greatly distinguished for his *conversational powers*, and was generally very communicative. In this respect a parallel might be instituted between him and Coleridge, presenting, however, some striking diversities. Coleridge was more studied in his conversations; Hall more free and spontaneous. Coleridge was frequently involved and metaphysical; Hall simple, natural, and intelligible. Coleridge usurped and engrossed conversation; Hall never did so voluntarily. Coleridge could and would talk upon any thing; Hall required to be more invited and brought out by the remarks or inquiries of others. Coleridge was more profound; Hall more brilliant. Coleridge did not deal in polished sentences, but would continue to talk for hours in a plain and careless diction; Hall was invariably elegant and classical, commonly vivacious and sparkling with wit. Coleridge was sure to be heard; Hall to be remembered. Coleridge had the advantage of a more universal knowledge; Hall of a more unencumbered and clearly perceptive intellect. Each was in his day the first of his class, rarely equalled, and probably never surpassed.

The conversations of Robert Hall abounded in wit, fine discriminations of character, and profound estimates of eminent authors. It would not be difficult to fill many pages with these, but our limits forbid more than two or three specimens.

On being asked if he had read the life of Bishop Watson, he replied that he had, and regretted it, as it lowered his estimate of the Bishop's character. Being asked why, he expressed his reluctance to enlarge upon the subject; but added, "Poor man, I pity him! He married public virtue in his early days, but seemed for ever afterwards to be quarrelling with his wife."

When Christmas Evans, a celebrated Welsh preacher, was in Bristol, he was talking to Mr. Hall about the Welsh language, which he said was very copious and expressive. "How I wish," said Mr. Evans, "that Dr. Gill's works had been written in Welsh!"—"I wish they had, sir," replied Hall, "I wish they had, with all my heart, for then I should never have read them. They are a continent of mud, sir."

On some one observing to him that his animation increased with his years, he exclaimed—"Indeed! then I am like touchwood, the more decayed the easier fired."

An extensive corn-factor in London met him at the house of a friend in Cambridge, who observed that Mr. Hall was very silent at table, and looked very suspiciously at the stranger. On his leaving the room, Hall said—"Who is that person, sir?" His friend informed him he was an eminent corn-dealer. "Do you transact any business with him, sir?"—"Yes."—"Have you sold him anything to-day, sir?"—"Yes, a large quantity of

corn."—"I am sorry for it; that man is a rogue, sir."—"Oh, you are quite mistaken, Mr. Hall; he is highly respectable, and can obtain credit to any amount in this market."—"I do not care for that, sir; get your account settled as soon as you can, and never do any more business with him." The event verified his physiognomical sagacity. In about twelve months afterwards this very person defrauded his creditors and fled the country.

His opinion of Barrow was thus expressed: "He is very imperfect as a preacher, sir. His sermons are fine lectures on moral philosophy; but they might have been heard by any man for years together without his receiving any just views of his situation as a sinner, or any comprehensive knowledge of the leading doctrines of the gospel. All his appeals were directed to one faculty: he only addressed himself to the understanding, he left the affections and emotions untouched. Hence, from one faculty being kept in constant and exclusive exercise, he is read with extreme fatigue. I never could read his productions long together." One in the the company said—"But you must allow, sir, that he exhausts his subject."—"Yes, he does that completely, sir, and his reader also at the same time."

We are aware, however, of the rapid evaporation which takes place in the spirit of such details when committed to paper, and shall therefore desist. The eye, the tone, the manner, are all absent. To give them is like painting Niagara, neither the sound nor the motion are there.

If the subject of biography possessed some one pre-eminent excellence or glaring defect, the task of description would be considerably lessened in difficulty, the excellence or the defect forming so characteristic a peculiarity as to aid the conception of a perfect likeness. But, in the present instance, little or no such help is afforded. The great qualities of Hall existed in the rarest combination. Men of talent have usually been celebrated for some one, or for a few powers of mind in more than ordinary vigour, and these predominant faculties have commonly been associated with disparaging deficiencies; a circumstance which has naturally suggested the classification of intellect, and the balance of proportion. Here, however, we have a union, and that with very little perceptible difference of vigour, between the various powers. All seemed to be of the highest order, and to move in entire harmony; so that in attempting an analysis of this fine edifice of mind, we resemble persons who should take the stones of a building one by one, or separate the pillars and the ornaments, which are found each complete in its kind, yet to be only estimated in their unbroken connexion and arrangement.

There was in Hall a singular mixture of the philosophic and the poetic; the acuteness of the one, and the imagination of the

other. Under the influence of the former, had he devoted himself to logic and metaphysics, in accordance with his earliest tendencies, he might have ranked with Locke, Des Cartes, Cudworth, Clarke, Reid, Dugald Stewart, and other reasoners, the acutest and most refined. Had he employed himself in the researches of philosophy and criticism, his penetration would have rivalled the etymologists and searchers into language, and he might have added to the list of the Bentleys, the Buxtorfs, and the Kennicotts. The testimony of a very competent witness, Dr. Hutton, who heard him in a casual conversation expatiate on Barrow's Disquisitions on Mathematical measure, and on the genesis of curves by motion, as taught by Barrow and Newton, would tend to the conclusion that had he pursued those subjects he might have participated in the triumphs and the fame of the most eminent men. Had he been educated for law, and trained for Parliament, there can be little question that, with all his disadvantages of voice, his name would have been associated with the first of our Senatorial orators. He would have displayed in felicitous combination much of the splendour of Burke, the wit of Sheridan, the flow of Chatham and of Pitt, and the eloquence of Fox. We have already stated that he was distinguished for the imaginative as well as philosophical faculties. This is evident in the use he makes of figurative language in his writings, and was conspicuous in the appropriate though somewhat rare employment of them in his public discourses. We are inclined to believe that imagination was one of the chief constituents of his mind, and that it gave intensity to his sarcastic powers. His compositions evince the element of poetry as a basis of his mind. If his ear was not tuned to sounds (he was not musical,) there was melody in his soul; and nothing in this point of view can be more delightful than to listen to those fine strains of mingled piety, pathos, and true poetry of sentiment and feeling, that often occur in his works. Take the following specimen. It is the concluding part of the funeral sermon for Dr. Ryland:—

"If the mere conception of the reunion of good men, in a future state, infused a momentary rapture into the mind of Tully; if an airy speculation—for there is reason to fear it had little hold on his convictions—could inspire him with such delight, what may we be expected to feel, who are assured of such an event by *the true sayings of God!* How should we rejoice in the prospect, the certainty rather, of spending a blissful eternity with those whom we loved on earth, of seeing them emerge from the ruins of the tomb, and the deeper ruins of the fall, not only uninjured, but refined and perfected, 'with every tear wiped from their eyes,' standing before the throne of God and the Lamb, *in white robes and palms in their hands, crying with a loud voice,*

Salvation to God that sitteth upon the throne, and to the Lamb, for ever and ever! What delight will it afford to renew the sweet counsel we have taken together, to recount the toils of combat, and the labour of the way, and to approach, not to the house, but the throne of God, in company, in order to join in the symphonies of heavenly voices, and lose ourselves amidst the splendours and fruitions of the beatific vision!

"To that state all the pious on earth are tending; and if there is a law from whose operation none are exempt, which irresistibly conveys their bodies to darkness and to dust, there is another, not less certain or less powerful, which conducts their spirits to the abodes of bliss, to the bosom of their Father and their God. The wheels of nature are not made to roll backward; everything passes on towards eternity; from the birth of time an impetuous current has set in, which bears all the sons of men towards that interminable ocean. Meanwhile, heaven is attracting to itself whatever is congenial to its nature, is enriching itself by the spoils of earth, and collecting within its capacious bosom whatever is pure, permanent, and divine, leaving nothing for the last fire to consume but the objects and the slaves of concupiscence; while everything which grace has prepared and beautified shall be gathered and selected from the ruins of the world, to adorn that eternal city *which hath no need of the sun, neither of the moon, to shine in it, for the glory of God doth enlighten it, and the Lamb is the light thereof.* Let us obey the voice that calls us thither; let us *seek the things that are above*, and no longer cleave to a world which must shortly perish, and which we must shortly quit, while we neglect to prepare for that in which we are invited to dwell for ever."

During the latter years of his life, Robert Hall was brought, by his removal to Bristol, into close association and friendship with another of the most eminent writers of his age, John Foster. They constituted together a kind of double star in the moral firmament—but the light they emitted, though in both cases resplendent and benign, exhibited striking varieties. Their principles were similar, but their tastes were different. Both were literary benefactors to their country, each in his own way. Each had the greatness to estimate and admire the other's greatness, but neither was capable of being an imitator; the attempt in either case would have been self-destructive. As a thinker, Foster was the most profound. His mind was a fathoming line, which he perpetually employed in penetrating the depths of sentiment, and fetching up the purest gems. Diving to those profundities seemed easy to him, and he could extend the search to places far beyond the reach of most, even distinguished intellects. He was not like Coleridge, who would lose himself and others in metaphysical subtleties, or shapeless imaginings; but he had, with some exceptions, the clearest idea of what he intended to unfold, and could plunge into the deepest waters with his eyes open. Although Hall had a mind full of brilliant con-

ceptions, and a mind, too, which would never miss its way in the darkness, yet it was not capacitated to go down so low—to the very bottom, as it were, of thinking—as that of Foster. He would not go or stay long where imagination could not light his path, or revel, as the latter did, in the naked elementary forms and philosophy of truth. In the art of communicating, however, Foster was inferior. His style has few graces, and is not unfrequently involved. He seems to work, but not to win his way. He aims to convince, but not to please. He would force the judgment into subjection, but aims not to carry captive the taste and the fancy. In Hall the very reverse of this is observable. He imparts the sublimest truth in a graceful manner. Secure of his thoughts, he seeks to beautify and embellish them. His words are carefully chosen, assiduously collocated and formed into brilliant sentences. His language is rich and full of melody. It seems instinct with the vigour, purity, and flexibility of his conceptions, and flows as if by necessity, into courses of varied beauty and grandeur. As the subject requires, it is smooth as the river, and rushing as the cataract. He is seen at once glowing with the majesty of thought, and the mastery of language. In reading Foster, you want Hall's illuminations; in reading Hall, you want Foster's bottoming power.

Two things, at least, seem essential to the formation of a good style, namely, a thorough acquaintance with classical literature, and a refined taste in the art of composition. In these respects Robert Hall surpassed his friend, who was very little addicted to what is strictly termed elegant learning, and who felt no great concern about the order of words and the euphony of language. To attain his end Hall would generally compose for the press with Johnson's Dictionary before him, to assist in the use of terms, and in the balancing of synonyms. He was familiar with the Greek and Latin writers, having read them with critical attention. The writer of this article has heard him state that he had perused everything in Greek literature; and, on a visit, he had the opportunity of examining his copy of Plato, in whose writings he much delighted, which everywhere bore the marks of a studious perusal, by frequent pencil observations on the margin. The Iliad and Odyssey were repeatedly and diligently examined. It cannot be questioned that the beautiful combinations of words in Homer gratified his taste, and stimulated his efforts at verbal perfection.

This extraordinary man appeared, however, in his noblest character in the pulpit. To the ministry he was early devoted; and, by his habits of mental and moral cultivation, he became gradually prepared for its occupation. Of all the aspects in which he is presented to us, there is none so imposing and so

important as that of the Great Preacher. Here he was unrivalled and alone.

In glancing at the divines of our own country, and of a more modern period, it would be easy to advert to the rivalry of their peculiar powers. We might descant upon the hortatory pungency of Baxter, the clearness of Tillotson, the gorgeous brilliancy of Taylor, the elaborate comprehensiveness of Barrow, the divine energy, singleness of aim, and spiritual mindedness of Howe, the argumentative perspicuity and force of Horsley, and the fervid eloquence of Whitefield; and, to come nearer, without touching the living, the simplicity, calmness, and vivid perceptions of Richard Watson, the enchanting sweetness and spiritual elevation of Pearce, the pathos and solemnity of Fuller. But while admitting and admiring the superiority of some in the peculiarities for which they are most celebrated, we cannot fix on an individual amongst them all who displayed so much of that union and concentration of various faculties of mind, which rendered Hall illustrious. In a considerable degree he appeared to have every quality named. He had pungency, clearness, brilliancy, comprehensiveness, energy, argumentative force, eloquence, simplicity, enchanting sweetness, devotional elevation, pathos, and solemnity. But his greatest peculiarity was, as we have intimated, the rich and perfect combination of qualities. Like the bow of heaven, every colour was there, and in harmony.

We may, perhaps, be reminded of the most celebrated French preachers; and their pretensions are undoubtedly of the very first order. One of them—Saurin—stands alone as a Protestant; three as Catholics, are usually named together, Bossuet, Bourdaloue, and Massillon.

Saurin is described as having a strong, clear, and harmonious voice. He practised two oratorical *artifices*—using that term in the best sense,—namely, that of beginning his discourses in a low and subdued tone, and that of pausing at the end of sen tences to observe the effect upon his hearers. He wept from pure feeling, in addressing the wicked. This we could easily imagine from examining the appeals in his published discourses; but they would not at all suggest the description given by one who heard him. "His preaching resembled a plentiful shower of dew, softly and imperceptibly insinuating itself into the minds of his numerous hearers, as the dew into the pores of plants, till the whole church was dissolved, and all in tears under his sermons." In almost all his productions he displays great metaphysical subtlety, which one would scarcely suppose to flow in so soft a method. Here too, in fact, is discernible his greatest fault, for he appears to raise difficulties in order to solve them.

In the general course of his argumentation there is an air of vivacity and glowing energy, and in his appeals, ardour, pungency, and force. His mode of winding up a discourse by reiterations and amplifications of a portion of the text, or some one prominent idea, is powerfully impressive.

Bossuet, though eminent, is worthy of more admiration as an acute controversialist and sagacious historian than as a pulpit orator. He has indeed many noble passages which shew that he had great strength of pinion, and but for his prejudices and adulatory spirit would have soared much higher. He abounds in exclamations, apostrophes, and fulsome flattery to the great. We are tired in him and other French eulogists of "Grande Reine," "Auguste Monarque," and the offensive particularities introduced in celebrating the Virgin Mary, the Apostles and Saints. But, with all these extravagances, there is much force and grandeur; and though he often descends to the very ground, he must not be denied his distinguishing epithet of the "eagle of Meaux."

Bourdaloue has, by some critics, been assigned a far more eminent place in the temple of fame than Bossuet; not only because he is much freer, and, indeed, almost entirely free, from the faults to which we have just adverted, but on account of the solidity and earnestness of his reasonings, the beauty of his arrangements, and the novelty of his thoughts. He displays great resources of mind, has much of point and power, and sounds with great effect the note of alarm. But notwithstanding his fertility, the energy and eloquence of Bossuet at times render it difficult, in adjudicating their respective merits, to assign to either a very extraordinary superiority.

In speaking of Massillon, we hazard little by saying that he was the prince of French preachers, and as in writing, so in the character of his pulpit discourses he must be regarded as approaching nearer than any other in resemblance to Robert Hall. They appear to have been similar in their methods as preachers, and there are strong analogies in their compositions. The entire description of Massillon by D'Alembert, on his admission into the Royal Academy of Paris, might with little alteration be applied to Hall. He attracted and edified all classes of men, for though he commonly spoke in a language clear from its philosophical accuracy and reasoning, and in the highest degree both refined and eloquent, he spoke to the heart, and united pathos with sublimity, and his character for benevolence and pastoral fidelity, was as bright as his genius.

It is always interesting and instructive to compare the productions of kindred minds. We may be assisted therefore to judge of these two extraordinary preachers, if we bring into juxta-

position one of the most celebrated passages produced by each. Without further comment upon them we shall just remark that Massillon's appears most powerful in application, and Hall's most brilliant in conception,—

"I figure to myself," says Massillon, "that our last hour is come—the heavens are opening over our heads—time is no more, and eternity has begun. Jesus Christ is about to appear to judge us, according to our deserts, and we are here waiting at his hands, the sentence of everlasting life or death. I ask you now—stricken with terror like yourselves, in no wise separating my lot from yours, but placing myself in the situation in which we must all one day stand before God our judge—if Christ, I ask you, were this moment come to make the awful partition of the just and the unjust, think you that the greater number would be saved? Do you believe that the numbers would even be equal? If the lives of the multitude here present were sifted, should we find among them ten righteous? Should we find a single one?"

One can scarcely wonder at the instant effect which, according to Voltaire, was produced on the congregation. The whole assembly started up from their seats, and interrupted the preacher by murmurs of surprise and acclamation.*

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* We have given the passage in the most condensed, and, we think, the most powerful form in which it has appeared. It is most probably the nearest to what it was when first pronounced. Massillon, however, expanded it, we suppose, in passing through the press, and introduced other striking considerations. Whether these were real improvements others must decide, but it is due to the illustrious author that we should give the original, in what he at least deemed the amended character of it. "Je suppose que c'est ici votre dernière heure et la fin de l'univers ; que les cieux vont s'ouvrir sur vos têtes, Jésus-Christ paroître dans sa gloire au milieu de ce temple, et que vous n'y êtes assemblés que pour l'attendre, et comme des criminels tremblants, à qui l'on va prononcer, ou une sentence de grâce, ou un arrêt de mort éternelle : car, vous avez beau vous flatter, vous mourrez tels que vous êtes aujourd'hui ; tous ces désires de changements qui vous amusent, vous amuseront jusq'au lit de la mort ; c'est l'expérience de tous les siècles ; tout ce que vous trouverez alors en vous de nouveau, sera peut-être un compte un peu plus grand que celui que vous auriez aujourd'hui à rendre ; et sur ce que vous seriez, si l'on venoit vous juger dans le moment, vous pouvez presque décider de ce qui vous arrivera au sortir de la vie.

"Or, je vous demande, et je vous le demande, frappé de terreur, ne séparant pas en ce point mon sort de vôtre, et me mettant dans la même disposition où je ceuhaite que vous entriez ; je vous demande donc : Si Jésus-Christ paroissoit dans so temple, au milieu de cette assemblée, la plus auguste de l'univers, pour nous juger, pour faire le terrible discernement des boucs et des brebis, croyez vous que le plus grand nombre de tout ce que nous sommes ici fût placé à la droite ! croyez-vous que les choses du moins fussent égales ? croyez-vous qu'il s'y trouvât seulement dix justes, que le Seigneur ne put trouver autrefois en cinq villes tout entiéres ? Je vous le demande, vous l'ignorez, et je l'ignore moi-même ; vous seul, ô mon Dieu ! connoissez ceux qui vous appartiennent, nous savons du moins que les pécheurs ne lui appartiennent pas. Or, qui sont les fidèles ici assemblés ? les titres et les dignités ne doivent être comptés pour rien ; vous en serez dépouilles devant Jésus-Christ : qui sont-ils ? beaucoup de pécheurs qui ne veulent pas se convertir; encore

We subjoin the magnificent passage of Hall, selected from his funeral sermon for the Princess Charlotte of Wales:—

"Eternity, it is surely not necessary to remind you, invests every state, whether of bliss or of suffering, with a mysterious and awful importance entirely its own, and is the only property in the creation which gives that weight and moment to whatever it attaches, compared to which, all sublunary joys and sorrows, all interests which know a period, fade into the most contemptible insignificance. In appreciating every other object, it is easy to exceed the proper estimate; and even of the distressing event which has so recently occurred, the feeling which many of us possess, is probably adequate to the occasion. The nation has certainly not been wanting in the proper expression of its poignant regret at the sudden removal of this most lamented princess, nor of their sympathy with the Royal family, deprived by this visitation of its brightest ornament. Sorrow is painted in every countenance, the pursuits of business and of pleasure have been suspended, and the kingdom is covered with the signals of distress. But what, my brethren, if it be lawful to indulge such a thought, what would be the funeral obsequies of a lost soul? Where shall we find the tears fit to be wept at such a spectacle? or, could we realize the calamity in all its extent, what tokens of commiseration and concern would be deemed equal to the occasion? Would it suffice for the sun to veil his light and the moon her brightness; to cover the ocean with mourning, and the heavens with sackcloth? or, were the whole frame of nature to become animated and vocal, would it be possible for her to utter a groan too deep, or a cry too piercing, to express the magnitude and extent of such a catastrophe?"

Mr. Foster has adverted with great keenness of observation, and we think with justice too, to the defects of Mr. Hall's preaching, in reference to the hearers, remarking, that the crude admiration which can make no distinctions, never renders justice to what is really great. He notices that it was too general and theoretic; that it presented things too much in unbroken breadth and mass; that it was apt to exceed, in the most eloquent parts, the allowed license of exaggeration; that it was not kept in due relation to the realities of life; that while it was most excellent in the discrimination of topics, sentiments, arguments, it did not

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plus qui le voudroient, mais qui diffèrent leur conversion; plusieurs autres qui ne se convertissent jamais que pour retomber; enfin un grand nombre qui croient n'avoir pas besoin de conversion: voilà le parti des réprouvés. Retranchez ces quatre sortes de pécheurs de cette assemblée sainte, car ils en seront retranchés au grand jour: paroissez maintenant, justes; où êtes-vous? restes d'Israël, passez à la droite; froment de Jésus-Christ, démêlez-vous de cette paille destinée au feu: ô Dieu! où sont vos élus? et que reste-t-il pour votre partage?"

ŒUVRES DE MASSILLON, Tom. iii., p. 311-12. 8vo. Paris, 1821.

discriminate and individualize human characters; and therefore it did not maintain an intimate commerce with the actual condition of the hearers. One thing may be remarked, however, in some degree of abatement of these severities of a friendly criticism, that probably Mr. Foster rarely if ever heard him address a very humble village congregation, when many of these blemishes would vanish amidst the clear and holy light of truth, set forth with the utmost simplicity and earnestness. On public occasions, and in his general ministrations, these defects would shade the moral splendour and dignity of the preacher, and ought the more to be remembered, that they may furnish important practical instructions to the evangelical prophets.

The text of his discourse was usually announced in the feeblest tone, chiefly from an incapacity of voice, and in a rapid manner, so as frequently to be inaudible to the majority of the congregation. He then introduced the general topic in a calm perspicuous statement, remarkable chiefly for its simplicity, and not often calculated to give a stranger any promise of what was to come. It seemed to be marked by no effort; frequently consisting of an exposition of the context, with a few plain observations. At times, however, he would commence with some important sentiment, striking the attention at once, and making the rest of his discourse a continual development of some fine train of thought which lay embedded in his own mind, and became every moment more visible as he disclosed it by a course of close, consecutive, and convincing reasoning. His most metaphysical addresses would gradually merge into earnest appeals. After the exordium, he would commonly hint at, rather than explicitly announce, the very simple divisions of the subject on which he intended to treat. Then his thoughts would begin to multiply, and the rapidity of his utterance, always considerable, would increase as he proceeded and kindled—evidently urged on by the momentum of his conceptions. He had no oratorical action, scarcely any kind of motion, excepting an occasional lifting or waving of the right *hand;* and in his most impassioned moments, an alternate retreat and advance in the pulpit by a short step. Sometimes the pain in his back, to which he was so great a martyr, would induce him to throw his arm behind, as if to give himself ease or support in the long-continued, and, to him, afflictive position of standing to address the people. Nothing of the effect which he produced depended on extraneous circumstances. There was no pomp, no rhetorical flourish, and few, though whenever they did occur, very appropriate images; excepting towards the close of his sermon, when his imagination became excursive, and he winged his way through the loftiest sphere of

contemplation. His sublimest discourses were in the beginning didactic and argumentative, then descriptive and pathetic, and, finally, in the highest and best sense, imaginative. Truth was their universal element, and to enforce its claims was his constant aim. Whether he attempted to engage the reason, the affections, or the fancy, all was subsidiary to this great end. He was always *in earnest*—profoundly in earnest. He lost himself in the glories of his theme; and amidst the fervours of his eloquence, the force of his argumentation, and the beauty of his diction, it was manifest that his supreme aim was to "win souls to Christ."

Notwithstanding many hesitations at the outset, there was a continual flow—a flow of elegant expression, exquisite turns of thought, pure sentiment, and exalted feeling. Among other qualities of his public speaking, it was one of the most extraordinary that, even while the rapidity of the utterance was such as almost to outrun the apprehensions of his hearers, every word, though by no means minutely premeditated, was as proper in itself, and as beautifully collocated, as if it had been the result of long and laborious consideration. He could touch at will the inner springs of emotion, dive into the recesses of the mind, expose sophism, vanquish error, and stem the fierce revolt of prejudice; and with equal success could he speak to the experienced and aged Christian, awakening at a touch his liveliest and holiest sensibilities, imparting consolation to the troubled mind, unfolding the mysteries, while he breathed the spirit of the gospel, dissipating the influence of evil agency, encountering the efforts of inherent corruption, opening Heaven to view, making its glories palpable, and by leading you through the gates of the celestial city, rendering the enchanted hearers conscious of strange joys, which seemed not to belong to earth, but to some more elevated state of existence. Then the bodily organs would appear to be almost incapable of furnishing a channel wide enough for the stream of thought, which expanded as it flowed, till it spread as into an ocean glowing with the morning light of eternity.

ART. III.—*Undersögelses-Reise til Östkysten af Grönland, efter Kongelig Befaling udfört i Aarene* 1828-31, af W. A. GRAAH, Captain-Lieutenant i Soe-Etalen. (*A Voyage of Discovery to the East Coast of Greenland, undertaken by Royal Command, in the years* 1828-31, by W. A. GRAAH, Captain-Lieutenant in the Navy.) Copenhagen, 1832.

THE expedition which is now in Lancaster Sound in search of a passage round the north coast of America into the Pacific, is of great commercial importance, independently of its main object. The Erebus and the Terror, fitted out, manned, officered, in the most effective style, are provided with steam-power and screw-propellors, as well as the usual equipment of sailing vessels of their class. This is the first application of steam-power to geographical discovery in those regions. In the latitudes in which the sea is obstructed with small floating ice, the ordinary machinery of paddle-wheels would be altogether inapplicable to navigation; but the screw seems peculiarly adapted to the wants of a vessel beset in the ice, a situation which the power of steam would evidently give the means of avoiding or escaping. The value of this power in navigating in the polar seas was acknowledged, but the usual machinery of paddle-wheels was so evidently liable to be clogged or broken in the ice, that no vessel fitted out for the whale fishery was ever provided with steam-power. In the ordinary business of the whale fishery, the command of the vessel independently of calms or contrary winds, would be of the greatest importance for following the boats in search of fish, or passing through the narrow lanes of water in the ice-fields which lead to open water in which the fish are found. This expedition, under a commander so well acquainted as Sir John Franklin with what would be useful in navigating through the ice in high latitudes, will bring to the test the applicability of steam-power to the whale fishery. It may be the most valuable result of this voyage of discovery.

The northern coast of the American continent, from Behring's Straits eastwards, has been traced by Captain Belcher, by Captain Franklin—whose land journey connected Captain Belcher's farthest advance eastward with the mouths of the Mackenzie River—and by the lamented traveller the late W. Simpson of the Hudson's Bay Company's service, who carried on this sea line of the American coast to the Great Fish Estuary. What remains to be explored is the coast from the most easterly point of Mr. Simpson's advance, to the most westerly point

reached by our navigators, who penetrated into Lancaster Sound in search of a north-west passage. If we had only the ordinary means of discovery and navigation in our hands,—vessels propelled by wind and tide,—it might reasonably be asked, whether our Government is justifiable in again fitting out ships filled with human beings, who leave at home a wide circle of anxiety and sorrow for their fate, to encounter an almost certain death in the most hideous and appalling form in which death can assail the living, healthy man,—that of starvation in an ice-bound sea. The escape of Captain Ross, when even Government had given up the attempt to rescue him or to discover his fate,—the escape of Captain Franklin by land from a death of starvation, should be a warning to Government not lightly to expose the bravest of its officers and men for objects rather of scientific curiosity than of practical utility. But the application of steam-power in the expedition of the Erebus and Terror reduces the danger, and furnishes a new element in the navigation of the northern ocean which it is the duty of an enlightened Government to use for the great end of discovering a practicable communication between Europe and Asia round the northern coast of the American continent. A passage between the coast and the ice-barrier which besets it, or a passage through the zone of ice which encircles the globe in a high latitude, enclosing, it is supposed, an open sea within, is not impossible with the new means which Providence has bestowed on man for exploring the earth. Should no other discovery be made than that there is no practicable passage to be discovered, it is an object worthy of a great nation to ascertain this point, and to know the face of the earth which the Almighty has given man to inhabit. If it can be done without any wanton and evident exposure of human beings to greater risk than the benefit would warrant, (and with steam-power the risk is reduced and the chance of success increased,) the accomplishment of this passage would be a great era in the history of the human race.

Looking with great interest for the issue of this expedition of the Erebus and Terror, we were naturally led to inquire what other countries have done during this half century in the field of discovery in the northern hemisphere. France sent a frigate, the Astrolabe, if we are not mistaken in the name, about the year 1840, to prosecute discovery in the northern Atlantic, and plant the tricolor flag on the Pole. A ball to the ladies of Reikavig in Iceland, another to the fair at Alten and Hammerest in Norway, a landing at Bell Sound in Spitzbergen, and a distant view of Berendt or Cherry Island, appear to have been all the achievements of this voyage, although the vessel carried a

naturalist, a draughtsman, and an historian to record the discoveries. The object of the French Government in sending out this expedition was probably to display the French flag on coasts on which it was forgotten, as the vessels were not prepared for encountering ice, and the range of their voyage of discovery was not beyond that of a gentleman's summer cruize in his yacht. If discovery was the object, it was a total failure.

Denmark claims as her own the vast peninsula called Greenland, included between the great inland sea of Baffin's Bay and the northern Atlantic, and which, commencing in the hitherto unknown north, ends at Cape Farewell, in latitude 59. 48. N. Within Davis' Straits, leading to Baffin's Bay, and of which Cape Farewell and the western coast of the peninsula of Greenland form one side, and Labrador, Cumberland Island, and America the other, the Danish Government, or rather the Danish Greenland Company trading with a monopoly from the Government, has ten or twelve small stations or colonies from Fredericsthal, the nearest settlement to Cape Farewell, in latitude 60. N., longitude 44. 38. W. of Greenwich, to Uppernavik, the most northerly settlement, on an island in latitude 72. 48. N., longitude 55. 54. W. The coast between these two points is surveyed, and laid down in sailing charts, as far as the Whale-fish Isles, at the south end of Disco Island, in latitude 68. 59. N., longitude 53. 13. W., where the Erebus and Terror parted with their transport on the 18th July. The coast from the south end of Disco Island to the Women Islands, of which Uppernavik is one, seems to be as yet only in sketch, or known only in prominent points. The coast on the other side of Cape Farewell, the east coast of the peninsula of Greenland, was not known at all previous to this voyage of Captain Graah.

It appears from the instructions of the Royal Commissioners to Captain Graah, that this voyage of discovery had two objects. The one was to explore the coast of East Greenland, that is the coast of the peninsula of Greenland bordering the Atlantic, and opposite to Iceland, from Cape Farewell at the entrance of Davis' Straits, up to latitude 69. 0. N., at which in 1822, Captain Scoresby had seen and fixed the position of a headland, which he called Cape Barclay, in latitude 69. 13. N., and longitude 24. 25. W. That enterprizing navigator had, in 1822, made this coast in latitude 73. 0. N., and had visited and fixed many points of it. When he left it at Cape Barclay, in latitude 69. 13. N., he was of opinion that he could have run down the coast all the way to Cape Farewell, as he saw no insurmountable obstacle from ice when he left it. The object of his voyage, however, which was an ordinary whale fishing adventure, did not permit him to make the attempt. To determine this point, and to lay down the coast from

Cape Farewell to Cape Barclay, from which, northwards, Captain Scoresby had given an outline with several well determined points, was the object of Captain Graah's voyage, as a voyage of maritime discovery. The voyage had also an antiquarian object.

This east coast of Greenland was long considered to have been the seat of a flourishing Icelandic colony, with towns, churches, bishops, and 190 parishes, or parish divisions. Monasteries, a cathedral, and endowments of land for their support, and all the civilization known in other northern lands in the 14th century, existed here; but in the beginning of the 15th century all communication ceased—was cut off apparently by the accumulation of ice which prevented all access. There were not wanting, in the last century, people who imagined that this Christian colony might still be existing, shut in by a wall of ice from the rest of the world, and retaining still the religion, manners, and language of their forefathers of the fourteenth century. Some navigators even, who at various periods attempted to approach the coast, imagined they had seen across the ice, houses and steeples, had heard church bells ringing, and had perceived flocks pasturing on the hills. It was a fine foundation for imagination to build upon, because there was recorded undeniable truth for a foundation. It was a fact resting upon historical documents, that, in the year 983, one Gunbiorn had been driven by a storm to the west of Iceland, and had discovered land. It was equally beyond doubt that one Eric Raude, or the Red, who was under sentence of banishment from Iceland, went to settle in this new country, and that fourteen years after he had settled there, his son Leif went to Norway, adopted Christianity while he was at the court of King Olaf Tryggvesson, and returned with a priest to Greenland. Leif's grandson, Sokke, assembled the colonists at a town, or farm, called Brattalid, represented to them that they required a bishop for the honour of the colony, and for the sake of religion; and a learned priest, called Arnold, was selected and consecrated bishop of Greenland, in the year 1121, by the Archbishop of Lund in Scaria. The bishops were at first suffragans of the Archbishop of Lund, and afterwards of Dronthiem, when that See was made an archbishopric; and seventeen bishops of Greenland are known by name, including the last Endrid Andreasson, consecrated in 1406. There is proof of a marriage-contract prepared by him and executed at Garda, the town and episcopal seat in Greenland, three years after his consecration; but from about this date all communication with this colony appears to have ceased. Pontanus, in his history of Denmark, supposes that the extraordinary pestilence in the northern parts of the world, called the Black Death, which appeared about the year 1349, may have extended to Greenland, and have swept off the colonists. Traditions are still current

in Scotland and Norway, of whole districts, once cultivated and inhabited, having been entirely depopulated by this epidemic disorder—the most remarkable and fatal known in tradition or history. Pontanus, also, ascribes it to a prohibition of Queen Margaret, about the year 1389, to trade with Iceland, the Færo Isles, and other northern countries, without a license from government. Her successor, Eric of Pomerania, and his successor, Christopher of Bavaria, were engaged in the internal commotions in Sweden, and in the wars with the Hanseatic League; and Christian the First was occupied with Swedish affairs, and the conquest of Ditmarsh in Holstein. His son John was occupied in the same way; and it was not until the time of his son, the Second Christian, that the Archbishop of Dronthiem, Walchendorf, recollected that one of his bishoprics was missing, and had not been seen for the last 150 years. Walchendorf was raised to the Archishopric of Dronthiem in the time of King John, in the year 1512; but, in consequence of disputes with Christian the Second, he left his See, to carry his complaints to Rome, where he died in 1521. He attempted to re-discover Greenland, and appears to have fitted out a vessel for the purpose, but could not obtain King Christian's permission to send her out on the expedition. The sailing instructions, however, which he had prepared are extant, and the accounts he had collected from traditions, of the course to be steered. Christian III. repealed the edict against a free trade with Greenland, but it was not until Frederic the Second's time, in 1578, that any attempt was made to re-discover the lost colony. It appears that, in 1433, some account of this Christian colony must have reached Rome, for Pope Eugene IV. appointed one Bartholomy to be Bishop of Greenland. It does not appear, however, that he ever reached the country. The last bishop known to have officiated there was Andreas, or Endrid Andreasson, appointed in 1406, and of whom a document, executed in Greenland in 1409, is said to have been discovered. A letter, also, of Pope Nicolas V. to the Bishops of Skalholt and Holum, in Iceland, of 1448, is said to be extant in the Vatican; and the letter refers to a communication from the people in Greenland, saying that they had been attacked and dispersed by an army of the natives, but had again assembled, and restored their churches, and praying for a bishop; and the Bishops of Skalholt and Holum are required, in this brief of the Pope, to send them a suitable priest. This was nearly a century before Walchendorf's time. What is known of the state of this colony in the 14th century—at the end of which, or about the year 1406, all direct knowledge of it ceased—rests upon manuscripts of Icelandic Saga, committed to writing in the 14th

century, and therefore entitled to some credit as documentary evidence. It appears from Walchendorf, Torfœus, and others, that, according to these ancient authorities, the colony was divided into the Eastern Settlement and the Western Settlement, with a large uninhabitable tract of desert mountain-land between them. In the Austrbygda, or Eastern Settlement, was the Episcopal seat and town of Garda, twelve parish churches, and two monasteries. The number of inhabited places, or farms, was 190. The Vestrbygda, or Western Settlement, contained four parish churches, and 110 farms, or inhabited places. The names of the parishes, the endowments of land, hunting and fishing grounds, belonging to the cathedral, to the monasteries, and to individuals, and other statistical particulars and local circumstances of fiords, islands, and distances in time required to row from one place to another, are related, and no attempt to create wonder, no wish to exaggerate or diminish reality, appears in the accounts drawn from these sources. We may impose upon ourselves by imagining more under the names of a cathedral, an Episcopal seat, a town, a farm, than the reality, in such a country and climate, admits of; but the error is in us and in our ideas, not in those who describe. It cannot be doubted—as the vestiges and remains of buildings in the country confirm the contemporary documents—that the Icelanders had, in the 10th century, established a colony somewhere in Greenland, and that it had attained to such a population and importance as to have churches and a succession of bishops, of whom seventeen are known, from the year 1121 to the year 1406.

This old colony was universally considered to have been situated on the east coast of Greenland, opposite to the mother country Iceland. In the course of the 17th century, between the years 1605 and 1670, seven or eight expeditions were fitted out by the Danish Government for its re-discovery; but none succeeded in approaching the land on that side of Greenland nearer than from three to fifteen miles, on account of a barrier of ice resting on the coast. The attempt was at last abandoned as fruitless. In 1587, John Davis discovered Davis' Straits within Cape Farewell, but none looked for the ancient colony in that quarter; and the story of its former existence was forgotten, or considered to be an idle traditionary fable. It appears now, however, that Davis had only made a re-discovery, and that, 600 years before his time, the Icelanders had not only entered Davis' Straits, but had colonized its western coast; and, from an inscription found in 1824 on an island near the entrance of Lancaster Sound—and which is preserved in the museum of Copenhagen—it appears that those old navigators had penetrated

far to the north on this coast, and that Parry, and other modern voyagers, had been only following the steps of the Northmen in those seas.

In 1718, Hans Egide, the father of all Protestant missionary enterprizes, who was then minister of the parish of Vagen in the island of Gimso in Norway, felt himself called to labour for the conversion of the heathen Esquimaux on the coast of Davis' Straits. He resigned his living, and was for eight years soliciting permission from Government, which in 1721 was granted, to proceed from Bergen as a missionary to the west coast of Greenland. He landed at an island which he called Hope, and established a colony which he called Good Hope. He soon acquired the confidence of the harmless natives; but neither he nor the Danish Government appear to have suspected at the time that they had formed their settlement in the country formerly occupied by the old colony. The natives had no tradition among them of its former existence, or their traditions were not attended to; and the impression was general that the old colony had been situated altogether on the other side of Cape Farewell, on the inaccessible east coast of Greenland, not within Davis' Straits on the west coast. In 1723, Egide set out on an expedition to the east coast with two sloops to discover the lost colony, but he only got down the Straits to an island called Sermesok, in latitude 60. 20, where his provisions failed. On this expedition, however, he discovered—at a place called Kakortok by the natives, between the latitude 60 and 61 N.—a remarkable ruin, the remains of a stone building of the old colonists. Many similar remains of former habitations were discovered afterwards in the same district, now called Juliana's Hope, and these were all considered to belong to what was called the Western Settlement of the old colony; but its far more important Eastern Settlement was still considered to have been round Cape Farewell, and along the eastern coast of Greenland. Hans Egide remained for fourteen years at his missionary station, and then left it in charge of his son Paul Egide, and returned to Copenhagen to promote the commercial and missionary affairs of his colony. It consists at present of thirteen settlements, fifteen smaller mercantile establishments, and ten missionary stations, of which four belong to the Moravian missionaries. The whole population connected with them is reckoned to consist of about 6000 souls, of whom 150 are Europeans, and five or six vessels yearly trade with them. Two expeditions were undertaken after Hans Egide's time for the discovery of the Eastern Settlement—one in 1752 by Petee Olson Valloes, in a Greenland skin boat, or women's boat. He went along the coast southwards, and visited the fiords in the district now called Juliana's Hope,

which at that time was not settled by Europeans, and, after wintering at Agluitsok Fiord, he proceeded next summer, doubled Cape Farewell, and was the first European who set foot on the south end of the east coast of Greenland. But as his provisions failed, he only reached the latitude of 60. 28. on that side, consequently not so high as the supposed beginning of the ancient Eastern Settlement. In 1786-7, another expedition was undertaken by Paul Egide and Rothes to the east coast, but, on account of ice, they could not get nearer to land than from two and a-half to three leagues. The attempt to approach the land appears to have been abandoned as hopeless, until Captain Scoresby, in 1822, showed by his voyage, that, in much higher latitudes—viz., between 70. and 75. north, the coast was not altogether unapproachable. He landed at several points, determined their geographical position, gave an outline of the coast, with many points well fixed, and, in reality, effected more for geographical science in a few days of leisure from his main object on a whale fishing expedition, than the Danish Government had done in 400 years. The more immediate and necessary business of his mercantile adventure in the whale fishing prevented this able navigator from exploring the coast to a lower latitude than 69° N., which is farther north than the old eastern settlement of the Icelandic colony was supposed to have extended. But he met with no obstruction from ice, and saw no impediment which, in his judgment—and Scoresby is certainly the most experienced navigator who has visited those seas—would have prevented him from running down the coast on this occasion to Cape Farewell, if his business had allowed him to attempt it.

This published opinion of Captain Scoresby was, in fact, a challenge and a reproach to the Danish Government in the eyes of the scientific world. Here was a Whitby captain exploring and laying down their own coasts for them in his merchant vessel, and doing in a week or two what they had been talking of doing for two hundred years. This appears to have been the stimulus which roused the Danish Government to the extraordinary exertion of sending out a very able naval officer, of perseverance, intelligence, and spirit, not exceeded by the most enterprizing officers of any country—and giving him no adequate equipment, nothing suitable for such an undertaking—no crew, no second officer, no accompaniment of any kind but one Danish sailor to act as his cook, if Captain Graah chose to take a cook where no stock of food was provided for him. He appears even to have had no command over the functionaries or agents of the colony, to insure a supply of provisions being forwarded to his wintering station, or to meet him on his return. He was at their

mercy, or dependent on their convenience, in their mercantile arrangements, for the means of subsistence. The Danish Government appears to have tried to do as much as possible for science at the least possible expense; and it is wonderful that this excellent officer accomplished so much with such a total destitution of suitable means. His Government did little more than put him on shore in Greenland to explore the coast, with his great coat on his back, his sextant and chronometer in his pocket, and a sheet of instructions. No necessary articles, no comforts, no medicines were provided at first, much less sent out to meet the exhausted traveller. Here were no portable soups, concentrated essences of meat, canisters of preserved viands; none of the ingenious devices for affording nutritious and wholesome food in small bulk, with which even our merchant vessels on long voyages are provided. He was literally sent alone on a voyage of discovery in Greenland, without any provisions to fall back upon, or carry with him.

Captain Graah sailed from Copenhagen the 31st of March 1828, a passenger in a brig belonging to the Greenland Trading Company. He gives a suggestion on this voyage which would well deserve the consideration of our philanthropic societies which occupy themselves with the means of preventing disasters at sea—viz., that a simple code of signals should be adopted, by common consent of all nations, for communicating the latitude and longitude between vessels meeting at sea. He mentions falling in with an American brig laying to, which hailed his vessel, to inquire the latitude and longitude; and he was doubtful whether the answer could have been heard. With very little trouble, our Government might establish some simple signals for conveying the information which is always welcome to merchant vessels at sea, and which would be soon adopted by all nations, if our Customhouse required all our vessels to be provided with a printed code, and the necessary flags.

On the 27th April they made Cape Desolation, and came to anchor at Frederic's Hope, in latitude 62 longitude 50 west of Greenwich. This is the principal settlement of the Danish colony in Davis' Straits. The vessel appears not to have been fortified, like a whaler, against the shock of ice; and, therefore, had to keep clear of the coast, which is always encircled with ice about Cape Farewell and the entrance of the Straits in latitude 59°. Captain Graah left Frederic's Hope on the 5th of June in a Greenland boat, and proceeded along the coast, southwards, to Juliana's Hope; the settlement nearest to Cape Farewell, in latitude 60. 42. 54, and longitude 46. 0. 44. From this place he was to fit out his expedition of discovery round Cape Farewell. The passage is inside of innumerable islands and ice

fields. The highest mountains on this west coast of Greenland were found to be from 4300 to 4500 feet high. They are supposed to contain tin, and lead ore, and the mineral called Kryolith is used by the natives, when it is ground to powder, to mix with their snuff. Although glaciers in many places reach from the mountains down to the sea, the country is not uninhabitable. There is a little pasturage for cows, and even potatoes may in some seasons be cultivated with advantage. Here also a small fish, of the herring species, is found in great abundance, and is dried in the sun, and preserved for winter food by the natives. It is here, therefore, that the most populous of the two ancient settlements may, from natural circumstances, be looked for. The remains of houses and other marks of inhabitation discovered by Egide, and about the year 1777, by Arctander and Bruhn, and revisited by Captain Graah, are all in this district of Juliana's Hope. These remains consist of walls or foundations of houses, overgrown with dwarf willow, and crowberry, and blackberry heath, but still sufficiently entire to shew the original dimensions. The most considerable of these ancient ruins appears to be in Igaliko Fiord, about sixteen English miles from Juliana's Hope. It stands on a long and narrow stripe of land, on which there is little grass, but only moss, and heath, and which is hemmed in by rocks from which the stones of the structure have been taken. The stones are built with care, and in regular courses, but apparently without mortar. There are four windows in the south side towards the sea, and two doors. The principal entry has been in the west end, and opposite to it, in the east end, is a good arched window entire; and these two end walls are 16 and 18 feet high. The side walls are still standing from 7 to 13 feet high, and about four feet thick. The length of the building is 51 feet, and the breadth 25. The arched window is five feet four inches high, and four feet four inches wide, and it and the other windows and niches are high in the walls, not near the level of the floor. The building has evidently been intended for a church, not a dwelling-house. Captain Graah had the whole interior dug up, but nothing was discovered—not even a pavement, or floor—from which, he conjectures, that this church had never been finished, and that it may be the one alluded to in Pope Nicolas V.'s brief of 1448, as being restored. But we find old chapels and parish churches in the north of Scotland, which never had in Catholic times, and some which have not at the present day, any other flooring than the cottages of the country, viz., the natural soil beat by the feet. Besides this church, many other remains of buildings have been discovered and described by Arctander, Olsen, and others, who have explored this district since 1777, when it was first colonized. It is

pretty clearly established, as no similar remains have been discovered or heard of from the natives on the other side of Cape Farewell, viz., on the eastern coast of Greenland, that this district of Juliana's Hope has in reality been the Austrbygda of the old colony, and the Vestrbygda has been higher up the Straits, north of Frederic's Hope; and the two settlements have been divided from each other by the uninhabitable district between, in which the mountains and precipices are close to the sea, and the vast glaciers filling the valleys render it unfit for human inhabitation. This opinion is confirmed by the physical circumstances of the country described by Captain Graah, viz., that fish for food abound within the Straits on this west coast, and that hares and reindeer are numerous, and supply a considerable proportion of the subsistence of the inhabitants; but on the east coast the natives depend entirely on seals and whales, and the reindeer and hare are unknown. These animals appear never to have penetrated across the middle ridge of this vast peninsula, or to have found their food on the east side of it. The natural means of subsistence—fish and game—must at all times have determined the amount of population in any district of this country, and the old settlement, with its churches, monasteries, and 190 parishes or hamlets, or farms, or inhabited places, must have been where food was most attainable, which it evidently is on the west side of this peninsula, viz., within Davis' Straits, not on the east side. This, the antiquarian object of Captain Graah's voyage, appears to be placed beyond reasonable doubt. He discovered no ruins after passing Cape Farewell, and on coming to the east coast, the supposed site of the Austrbygda, he could hear of no remains known to the natives; and the country is in every respect less adapted for subsisting inhabitants by its natural products.

The Greenland boats are from 22 to 24 feet in length, and 5 or 6 feet broad, and 2 feet deep. They have the skeleton only of wood, viz., the keel, ribs, stem, and stern posts and seats, and these are made usually of the drift wood found about the shores. This skeleton, instead of being clothed with planks, is covered with seal skins without the hair, stretched, well greased, and sewed together. When dry, this covering is as elastic and tight as a drum head. No nails or iron fastenings are used. The boat is so light that a couple of men can carry it; and in case of a leak, that is, of a hole being cut in one of the skins, to which it is much exposed in the ice, a lump of grease is stuck in the fracture, the boat is hauled up on the ice, and a piece of skin sewed over the hole. These are called women's boats, because the sewing them, and also rowing them with short oars, used in the European way, are performed by women. A loaded boat, with four or five female rowers, will

make 35 or 40 English miles a day, but every fifth day it must be hauled up to let the skins dry. The Kayak is used only by men, and is the Esquimaux canoe known to us by specimens in our museums, with a deck and hole in it, in which the man sits laced in with a water-tight skin round his middle. It is 12 or 14 feet long, $1\frac{1}{2}$ feet broad, covered all over with stretched skin, and is so crank, from the top-weight of the man's body, that it requires great dexterity to avoid being overset, or to recover from such a disaster. The Greenlanders, however, use the Kayaks in searching for and attacking white bears, or seals, and brave the heaviest waves in these little buoyant swimming vessels.

The most southerly settlement, that is, the nearest to Cape Farewell, is Fredericsthal, and between it and Juliana's Hope, above 50 different remains of dwellings had been discovered by Arctander; and Captain Graah discovered or heard of many more. From their situation he concludes that the ancient colonists must have subsisted then as now, upon the natural products of the sea and land, fish and game—not by cattle, for which grass is rarely found near these ancient habitations. Fredericsthal is situated in latitude 60. 0. 10., and longitude 44. 37. west of Greenwich.

Captain Graah's description of one of the long narrow fiords which he discovered on a preliminary excursion from Fredericsthal, and called Prince Christian's Sound, is very striking:—

"The depth of water must be very considerable, for the land on both sides is very high, and the sides of the precipices so steep that it is rare to find so much room at their feet as to draw up a boat on it. No vegetation, of course, appears on these steep rocks, not so much as a stalk of grass, or even any kind of moss. All nature seemed as dead as the rocks. The sea birds, which had surrounded us outside in thousands, disappeared, as well as the seals and other sea animals, and a single raven, that came croaking over our heads towards evening, was all that we saw of living nature in this Sound. The solemn stillness that reigned over all around us, was only broken by the thunders of ice masses breaking off from the field of ice, or by the strong rustling of some tide ripple. Just before dark, we were so fortunate as to find one of those shelves on which we could draw up our boat out of the water, and we had scarcely done so before a storm came on from the north."

Captain Graah passed the first winter at Nennortalik, an island inside of the group of which Cape Farewell itself is one. The winter was comparatively mild. The cold was seldom more than 13 or 14 degrees below the freezing point, while in Europe, during the same winter, it was from 20 to 30 degrees. The severe winters in Europe, it is observed by Captain Graah, are generally mild in Greenland, and *vice versa;* and, although in the most northerly

settlements in the Disco Gulf, at Omenak and Uppernavik, the thermometer will sometimes be 30 degrees under the zero of Réaumur, and the rocks are riven asunder, and even in-doors the blankets will be stiff and covered with hoar-frost in the morning, and frozen to the pillow; yet, to the feelings, he observes, the cold is not so intolerable, if there be no wind, as it often is in Copenhagen with the thermometer at 16 degrees.

On the 21st of March, Captain Graah set out on his voyage of discovery, with four Danes, five Greenland men, and ten Greenland women as rowers, and accompanied by a transport-boat with goods and provisions, and several fishermen in their kayaks. They went inside of the islands on which the capes called Cape Farewell and Statenhuk are situated, and through Prince Christian's Sound, at the mouth of which they were detained 25 days, on an island called Kikkertak, by storm and ice. Sending back his transport-boat, and superfluous hands, Captain Graah proceeded northwards along this coast, between the ice and the land, on the 26th of April; but was again detained for more than three weeks by the ice at a peninsula, called Nenneetsuk, in latitude 60. 28. On the 23d of June, the expedition had reached the latitude of 61. 47., and here, from the want of provisions to subsist the two boats' crews, Captain Graah sent back the naturalist, M. Vahl, and the interpreter, M. Mathiesen, who declared the dialect of the natives they had met with was no longer intelligible to him, and proceeded alone with his guide and huntsman, Ernenck. Ernenck was in his kayak, and Captain Graah in a women's boat, rowed by Ernenck's wives and other women. On the 10th of July, Captain Graah reached Kemisok, an island in latitude 63. 36. 50. Here he found an assemblage of about 100 people, most of whom had never seen an European, but by trading with others who frequented the Danish settlements they were acquainted with European wares, such as snuff, beads, and other articles. They were hospitable—entertained the traveller with dried seal's flesh, bear's fat, and other delicacies, and he was able to purchase a supply of such food from them. They were a taller, handsomer race than the Esquimaux within Davis' Straits. They knew nothing of any remains of dwellings on the mainland, which, they said, was always covered with snow, and had no grass; and reindeer and hares were unknown to them. On a very little island, called Alnik, 130 people were living in their tents for the object of catching seals, bears, and fish. They supposed a reindeer's skin, of which one of Captain Graah's female rowers had a pelisse, to be the skin of a dog, which proves that the reindeer do not frequent this side of Greenland. On the 18th of August, after a constant

struggle to get forward through the small openings of clear water between the vast field of ocean-ice on one side, and the snow-clad land on the other—starving by day, and sleeping under tents by night on the shore of the barren islets, Captain Graah reached an island in latitude 65. 15. 36, which he called Dannebrog's Isle, and turned back to seek winter quarters. He had ascertained, that from Cape Farewell, in latitude 59, up to latitude 65, no inhabitable land and no remains of former habitations are known to the natives, and that the ancient colony cannot have been situated between these two points. But between latitude 65 and latitude 69, where Captain Scoresby had landed and found clear water for his ship, nothing is known; and of the coast from latitude 69 to 72, which Captain Scoresby had run along without obstruction, nothing is known but some points of land which he laid down. As Captain Graah took possession, with the usual formalities, of all the land, and called it "King Frederic the Seventh's Coast," the Danish Government should take the trouble of exploring and laying down geographically their new territories.

In October, Captain Graah reached Nukarbik in 63. 21. 38, where he passed the winter. Dried seal's flesh, often half rotten, and always in short supply, was the only food of the party. The sluttishness and dirt of the Esquimaux, which Captain Parry describes so racily in his voyage, entered here into the daily fare and unavoidable way of living. Hunger made the seal's fat and flesh, with all the filth of the natives, but too often welcome to this ill-provided voyager.

The whole population met with by Captain Graah, between Cape Farewell and Dannebrog's Isle, was, he reckons, about 600 persons; and they are diminishing, by numbers who go yearly to settle where subsistence is more abundant, about Fredericsthal. Among this people, hunger, it is reported, often leads to abandoning the aged, and even to devouring each other—but this appears not well ascertained. Captain Graah praises highly the honesty, hospitality, and, according to their own ideas, the good manners, and politeness of these heathens. They have no religion, no prayers, sacrifices, or other religious observances; but they have a notion of higher unembodied beings, and ascribe a spirit or power to fire, water, air, the ocean, &c.

In the following April of 1830, Captain Graah once more endeavoured to penetrate to the north. But at the end of July the party were on a bare rock, shut in by ice, in latitude 64. 9. Food became scarce, even to starvation. Seals, birds, mussels, seaweed, could not be found, or were consumed. Old seal skins were the only food of the party. For five days and nights some small pieces of whale blubber, which they found in the sea, was

their only sustenance: and they must have perished, if Ernenck's son had not caught a small seal, which was instantly devoured raw, hide and hair, for they had been reduced for two days to ice and snow. Soon after, they killed a large seal, on which they lived until they reached Queen Maria's Valley, where four or five families were busy with the salmon-fishing. The health of this brave officer gave way at last under the accumulation of hardships, and of bad food, which consisted of stinking seal's flesh dried in the sun the year before, and he became seriously ill. He ascribes his convalescence to finding a place abounding in blaeberries and crowberries which, for nearly six weeks, were the principal food of the party. The Danish Government appears to have provided no medicines for them. No boat with provisions had been sent out to meet this forlorn crew, according to the orders left at Juliana's Hope. Twice they were shipwrecked, and were nearly left on a bare rock without their boat, for all were too ill to make any exertion to save it. At last on the 8th of October, when winter was already set in, they reached Prince Christian's Sound, and the only two men who were able to move were despatched to Fredericsthal, and some bread and wine were sent to them. Thus ended an expedition, as disgraceful to the Danish Government—for fitting out so badly, and abandoning so entirely, the officer sent out—as it is honourable to the skill, perseverance, and high sense of duty of the brave officer who accomplished so much with such want of means and of support. In September 1831, Captain Graah, after completing the survey of the districts of Juliana's Hope and Frederic's Hope, returned to Copenhagen.

One circumstance in the course of Captain Graah's narrative appears to us not sufficiently explained. In Averket Fiord near to Taterat, about latitude 61, Captain Graah heard of a large piece of iron, and hired a boat and went in search of it. It proved to be a small ship-gun; and a woman, supposed to be about forty years of age, said that in her childhood she had heard of it being there. But how could a ship's gun get up one of these fiords, if the coast is beset perpetually, as Captain Graah supposes, with an impenetrable field of ice stretching so far out into the ocean that ships cannot approach so near to the coast as even to be seen from it? A ship may, no doubt, have been wrecked upon the outside ice, but then the mass of ice on which the piece of the wreck with this gun on it was deposited, must have found open water to float up this fiord, and to be finally deposited on the beach. It is not told us by Captain Graah, how far within the mouth of the fiord, or how far above high water mark, this ship-gun was found. The natives, if they even had the means,

could have had no object for dragging over the ice, and up the beach, such a mass of iron which they could not reduce, or apply to any of their uses. Its locality, if minutely described, would have afforded a guess at the possibility of shipwrecked mariners, as well as a ship-gun, having at some period reached the land, and having mingled with the native race in a region from which they had no escape. This conjecture acquires some degree of probability from, or at least would account for, a circumstance observed by Captain Graah, that the inhabitants of this fiord, in particular, are of a different appearance from the ordinary Esquimaux race, " some of them having brown hair, and complexions so fair that the red tint of their cheeks was discernible; and in person they are taller than the other Esquimaux." The opinion, at any rate, that the east coast of Greenland in this latitude is at all seasons inaccessible to ships on account of an immovable barrier of ice, must give way before the simple fact of a ship's gun being found on the shore of one of the fiords. No theory, or opinion founded on the state of the ice on the coast in one season, can overturn this simple corroboration of Captain Scoresby's opinion, founded on his personal experience and observation, that the coast is at times open. In the narrow sea between Iceland and the coast of Greenland, at Captain Graah's farthest advance, latitude 65. 18., it is probable that fields of ice may accumulate, and press upon the land for long periods; but that this is a permanent junction of Iceland to the continent—while much narrower straits, in much higher latitudes, are only occasionally, not permanently, blocked up—appears improbable. The coast between latitude 69 N. and latitude 73 N., which Captain Scoresby found accessible in 1822, deserves investigation as much as the west side of this vast mass of land. The great inlets between Traill isle and Smith isle, about latitude 72, called Davy's Sound by Captain Scoresby, and that between Cape Brewster and Cape Tobin, about latitude 70, called Scoresby's Sound, may lead to valuable fishing waters. Whale oil, whale bone, seal skins, are almost the only products hitherto sought for from those polar regions; but in so vast a portion of the earth, the ores of copper, lead, and other valuable metals, may probably be found in situations accessible to modern enterprize. Plumbago is already an object of speculation from those countries, a vessel having been sent this year to the usual whale or seal fishing, with orders to complete the lading, if necessary, with that mineral; and since this article was in type, we observe the arrival at Leith of a vessel, the Eagle, with 100 tons of black lead, from Operininck, in latitude 72. 45., within Davis' Straits, where the vessel had been on a whale-fishing voyage. Guano is also a product searched

for in those latitudes at present, but probably the search will be without success. The sea birds may be as numerous in the north as on the coasts producing guano, but their habits, regulated by natural circumstances, are different. In the low latitudes between or near the tropics, the night is always about the same length, and with little twilight, and so dark that sea birds cannot discern their prey in the waters. They return to roost all the year round at sunset, on their native islet, which in time becomes covered with a bed of their excrements thirty or forty feet thick. In the higher latitudes the length of night is variable, and no such habit is formed. The six weeks of their breeding season, is the only period of the year they are forced by any natural circumstance to return to the same rock. By night, as well as by day, they can see to follow their food every where in summer, and to avoid their enemies; and in winter they are forced to migrate by the inclemency of the weather, and to change their habitations and haunts altogether. No such depots, therefore, of guano, similar to those in the tropical countries, can be expected in the high latitudes.

From Captain Graah's narrative, we learn a circumstance, not specially noticed by Captain Graah himself, of great importance in missionary enterprize. We find that the total population in this vast extent of country is estimated at about 6000 individuals, of whom about 150 persons are Europeans. We learn, also, that there are ten missionary stations, of which six belong to the Danish Lutheran Church, and four to the Moravians, Herrnhuters, or United Brethren. There is consequently one missionary, at least, to every six hundred of the population, and some of these stations have been established for about a hundred and twenty years. We learn, also, that the natives, for the sake of subsistence, are found congregated in groups of from 20 or 30 to 130 persons, at particular fishing stations on the coast, and that they are a remarkably docile, harmless race, without any fixed form of idolatry or superstition, and opposing no peculiar obstacle, but gross ignorance, to the labours of the Christian missionary. It is with astonishment, therefore, that we gather from Captain Graah's narrative that a very large proportion of this small native population is still heathen. He reckons the number of natives he fell in with between Cape Farewell and Dannebrog's Isle, the most northerly point of his expedition, at 600 individuals, or about one-tenth of the whole population of the country, who had never heard the name of Christ. Of these, the nearest were within ten days' journey of the missionary station of Fredericsthal, and all were in direct or indirect intercourse with the missionary and trading stations,—

were acquainted, and supplied, with snuff, beads, and other European articles, but not with the gospel. Captain Graah's guide, Ernenck, and the son and wives of Ernenck, were occasionally living in the immediate neighbourhood of the missionary station, and were all heathen. Captain Graah's interpreter and companion in part of his journey was the commercial agent, Mathiesen—not, as we might naturally expect, a Christian missionary, master of the language of the natives, and eager to seize the opportunity of mingling with the distant heathen—not a native, sufficiently instructed by the missionaries in the Danish language to accompany Captain Graah as interpreter. We are unwilling to doubt the zeal and faithfulness in their vocation of the Christian missionaries who have been sent forth to this corner of the heathen world, in such numbers in proportion to its population. The two Egides, Cranz, De Vries, and others who have laboured here, were unquestionably men of true missionary zeal, and devoted to their calling. The voluntary renunciation of all the comforts of civilized life, implied in living in even the best provided of the Danish settlements on this coast, is a pledge of the sincerity of purpose, at their outset in this missionary field, of the missionaries who from time to time leave Europe to devote themselves to their vocation here. What, then, can be the cause of such small and unsatisfactory results from a century of missionary labour in Greenland? We gather from incidental observations in Captain Graah's narrative, the true cause, and it is instructive to all who take an interest in the success of missionary undertakings. The missionary and his business are under, and secondary to, or connected with, the Government functionary and his business, and the mercantile agent and his business. The natives must gather oil and skins to trade with—must load and discharge vessels, transport goods, and do other work for the Government, or for the Greenland Company, which has a monopoly of the trade of the country from the Danish Government, and cannot be spared, at the proper season for travelling, to convey the missionary to where his business calls him, nor spared to be instructed, or to instruct, in the Christian religion. It was with difficulty that Captain Graah, although furnished with letters to the functionaries and head agents at the different stations, and employed in the Government service, could obtain the people, stores, and assistance necessary for his expedition. The dependence of the missionaries upon the civil power, and their subordination to it, have deadened Christian zeal and effort, even in this small sphere of action, and the missionary has shrunk into the salaried and subordinate officer of Government, content to do what the state

functionary or mercantile agent allows him the means to do, and not attempting to do more. The mixing also of mercantile pursuits, of trade or manufacture, or worldly gain, with the calling of a missionary—which is the principle acted upon in the missions of the Moravians, or United Brethren, both here and in the West Indies—is of deteriorating effect on the character and influence of the missionary. A merchant-missionary, a planter-missionary, is not in the true position of a teacher of the Christian religion to customers who must sell their fish and buy their goods at his shop, or to slaves who must work on his plantation. It is impossible to combine the Gospel and gain in the mind even of the Esquimaux. If he think the gain made out of his labour exorbitant, he will reject the doctrine as an imposition also, taught to him for the sake of the gain. The small success of these trading missions of the Danish Government, and of the United Brethren, during a century that they have been established, can only be ascribed to these causes. The people whom they have to convert are neither numerous nor savage, nor addicted to any exclusive form of idolatry. If they are not Christians, the fault is not in them, but in their teachers.

The progress made by Captain Graah in navigating along the coast between a barrier of ocean-ice and the shore, for upwards of five degrees of latitude, in a boat covered with skin, rowed by women, and incapable of sustaining the slightest shock, or of forcing a passage through the smallest obstruction from ice, is encouraging to the hopes that the Erebus and Terror, in navigating along a coast through similar impediments, may accomplish the grand object of running between the barrier of ocean-ice and the American shore, and of reaching Behring's Straits and the Pacific Ocean.

ART. IV.—*Memoirs of William Smith, LL.D., Author of the "Map of the Strata of England and Wales."* By his Nephew and Pupil JOHN PHILLIPS, F.R.S., F.G.S., Professor of Geology and Mineralogy in the University of Dublin. London, 1844.

THE year 1769 gave birth, in France and in England, to two men destined to exercise an important influence on the infant science of Geology, if they may not be considered its founders; for all previous inquiries respecting the structure of the earth consisted of pure assumption, or were largely mixed with it. These were George Cuvier and William Smith—both original discoverers—both men of genius—though possessing minds of different orders, and differing widely in the amount of cultivation bestowed upon them. In Cuvier we behold the accomplished scholar, the profound naturalist and philosopher, one of the brightest stars in the galaxy which adorned the French Institute, the reformer of the established classification of nature, the founder of the new science of Palæontology; we behold, also, the enlightened statesman, called, for his administrative talents, by Napoleon, to the office of counsellor of State, and continued in the same honourable station by the Bourbons of the Restoration and the Dynasty of the Second Revolution.

In William Smith we see the plain English yeoman, the self-educated land-surveyor, born in a district rich in fossil remains, and led by this circumstance, and by the profession to which he applied himself, to convert the playthings of his childhood into the studies of his riper years, till they conducted him, while using the most homely and unscientific nomenclature, to the important generalizations—that the English stratified rocks have a regular and invariable order of succession—that they may be identified, under doubtful circumstances, by their organic contents,—and that each had been, in succession, and for a long time, the bed of the sea.

The researches of Cuvier were prosecuted amidst ease and affluence, the sunshine of Court favour, and the applause of associated philosophers; those of Smith were carried on amidst the duties of a laborious profession, which he had formed in a great measure for himself, and in which he might have acquired affluence, could he have explored, with less eagerness, the career of discovery in which he had embarked, and which, like poetry with Goldsmith—

"Found him poor at first, and kept him so."

He laboured alone and neglected, through a large portion of his career, with but little private support, destitute of public patronage, without the countenance of scientific associations, and keeping aloof from them, until he had achieved the great work on which D'Aubisson pronounced this eulogium :—

" Ce que les minéralogistes les plus distingués, ont fait dans une petite partie d'Allemagne, en un demi siècle, un seul homme (M. William Smith ingénieur des mines,) l'a entrepris et effectué pour toute l'Angleterre, et son travail, aussi beau par son résultat qu'il est étonnant par son étendue, a fait conclure *que l'Angleterre est régulièrement divisée en couches, que l'ordre de leur superposition n'est jamais interverti; et que ce sont exactement des fossiles semblables qu'on trouve dans toutes les parties de la même couche, et à des grandes distances.*

" Tout en payant au travail de M. Smith, le tribut de l'admiration qui lui est dû, il me sera permi de désirer, que des observations ultérieures en confirment l'exactitude, et déjà, sur plusieurs points, les travaux de minéralogistes Anglais l'ont confirmée."

He whose labours received this first honourable acknowledgment at the hands of foreigners, and who, in his own country, was called—in the first instance almost in derision—" Strata Smith," was hailed, in his latter days, by the Geological Society of London, as the father of English geology, was presented by them with the first Wollaston medal, struck to reward original discoverers, was honoured, by the University of Dublin, with the somewhat incongruous title of Doctor of Laws, and rewarded with a pension by the Government, at the request of the British Association.

Between the heads of the French and English schools of geology—the former taking the tertiary, the latter the secondary strata for the subject of its researches—there were other points of resemblance and of contrast. The decline of life was clouded with affliction to both of them. Cuvier suffered from the loss of children ; Smith from pecuniary difficulties. The frame of Cuvier reeled beneath the blow; adversity dashed its billows against Smith as against a rock—his fortitude and patience, his buoyancy of spirit and his enthusiasm, never forsook him amidst the severest distresses.

The ancestors of William Smith, we are told by his nephew and biographer, were a race of farmers, who, for many generations, owned small tracts of land in Oxfordshire and Gloucestershire. His grandfather, " William Smith of Sarsden, yeoman, eldest son and heir-apparent of William Smith, the elder yeoman of Churchill," on his marriage in 1730, with " Lucy, daughter of Henry Raleigh, yeoman of Prescott, in Oxfordshire," received as a marriage portion, one hundred and ten pounds, in consideration of which his father settled upon the bride as a jointure,

" one half yardland and half a quarter of a yardland of arable meadow and pasture in Churchill Field." The lands thus described, when consolidated at the inclosure, amounted to nearly ten acres, which were sold, in 1809, for seven hundred pounds. It was the boast of the subject of these memoirs, that these Raleighs were an obscure or forgotten branch and descendants of Sir Walter Raleigh—an opinion for which his nephew has been able to find no support, and on which he very justly remarks, that "it is of very little consequence, in the history of Strata Smith, from what *gens* he sprung; his immediate ancestors, and all his connexions, were men in humble life: on the oolitic soils, which they had cultivated for ages, he was born and bred; on these he planted, in advance of all other men, the standard of geological discovery; to the study of these, his best days of active mind were devoted, and in these, according to a natural, if fanciful wish, his remains are laid to rest."

William Smith, the geologist, was the son of John Smith, the second son of the above marriage. At the age of eight years, he was deprived of his father, of whom all he has recorded is, that he was an ingenious mechanic, and died from the effects of a cold, caught whilst engaged in the erection of some machinery. His mother, whose memory he cherished with fond devotion, is described by him as a woman of ability, of a gentle and charitable disposition, and attentive to the education of her children.

"According to his own account, however," says Professor Phillips, "not only were the means of instruction at the village school very limited, but these were, in some degree, interfered with by his own wandering and musing habits. The rural games, in those 'merrie days' of England, might sometimes attract the wayward, and comparatively unrestrained scholar from his books, but he was more frequently learning of another mistress, and forming, for after life, habits of close and curious contemplation of Nature."

As there are many now who sigh for the revival of those saturnalia of the middle ages, which, despite the Puritans, long lingered in the more sequestered nooks of Protestant England, it may not be uninteresting to give a statement of the items of expenditure at one of these merry makings of Oxfordshire, known as Whitsun Ales, to which William Smith of Churchill was treasurer in the years 1720 and 21. The total receipts in 1721 were £58, 19s., the expenditure £54, 5s. 11d. The disbursements formally vouched being as follow:—

For Ribbands, ...	£11	19	0
Malt, ...	10	5	0
Cake, ...	5	5	0
Excise, ...	4	7	11
The Fool, ...	1	0	0

The Fiddler,	£0	10	6
The Morris,	0	6	0
The Lord,	0	2	6
The Lady,	0	2	6
The Lord and Lady gave the Fool,	0	1	6
The Bells,	0	1	6

The lord's man and the lady's man and five maids received nothing.

After his father's death, and his mother's second marriage, his father's eldest brother, William, who died unmarried, and to a portion of whose property he was heir, became young William's protector.

"From this kinsman," says his biographer, "who was but little pleased with his nephew's love of collecting the pundibs and pound-stones, or quoit-stones, and had no sympathy with his fancies for carving sun-dials on the soft brown oven-stone of the neighbourhood; he, with great difficulty, wrung by repeated entreaties money for the purchase of a few books to instruct a boy in the rudiments of geometry and surveying. But the practical farmer was more satisfied when the youth manifested an interest in the processes of draining and improving land; and there can be no doubt that young William profited, in after life, by the experience, if it may be so called, which he gathered in his boyhood, while accompanying his relation ('old William') over his lands at Over Norton."

The pundibs and poundstones, here spoken of, were fossils of the oolites, the former *tenebatulæ*, the latter a large *echinite*, often used by the dairywomen as a poundweight.

With a memory so retentive that whatever he saw he remembered for ever, and was able, to the close of his life, to recall every event of his boyhood, William Smith prosecuted his studies from 1783 to 1786, irregularly, and without assistance, but with ardour and success; began to draw, attempted to colour, and made some progress in those branches of the mathematics, then deemed sufficient for surveyors and engineers, and became, at the age of eighteen, assistant to Mr. Edward Webb, a land-surveyor of Stow-on-the-Wold, who had undertaken the survey of the parish of Churchill, for the purpose of inclosure. The master, like his pupil, was self-taught, deficient in literary acquirements, but skilled in mechanics, mensuration, logarithms, algebra, and fluxions. His practice combined much, such as the determination of the force of water, and the planning of machinery, which is now regarded as the province of the engineer.

From 1788 he was actively engaged in the ordinary business of a land-surveyor, in the course of which he traversed the oolites of Oxfordshire and Gloucestershire, and the lias and red marls of Worcestershire—visited the Salperton Tunnel, on the

Thames and Severn Canal—examined a boring for coal in the New Forest, opposite the Shoe Alehouse at Platford,—noting, and comparing, and treasuring up for future combination, the variations of the soil, and their connexion with the general aspect and character of the country, and with its agricultural and commercial relations.

In 1791, we find him walking by Burford, Cirencester, Tetbury, Bath, Radstock, Old Down, and Stoneaston, to Stowey, where Webb had made over to him the conduct of a survey. There he observed with surprise red marl similar to that of Worcestershire, holding the same position with regard to the lias and superincumbent rocks. He had previously observed, in the collieries of High Littleton, where he had been employed to make a subterranean survey, some regularity in the strata sunk through in the pits, though the colliers would not allow any regularity in the hills of superincumbent "red earth;" "but on this subject," says Smith, "I began to think for myself."

The repeated surveys which he made of these collieries, in the years 1792-3, suggested to him the idea of a model of the strata in a coal country, formed of the materials of which they are composed, reduced to scale, and placed in the order in which they occur.

Some of the neighbouring gentry, admiring the ability and perseverance manifested by Smith, in his employment at the High Littleton Collieries, interested themselves in the advancement of his professional career, for which the occasion was highly favourable. Canals were then as much the order of the day as railroads are now; and he seized the opportunity to procure instruments, extend his reading, and to qualify himself to practise successfully as a canal engineer.

"This," says his biographer, "was a tide in his affairs, which, had he followed the middle current, without stopping to examine the banks, would have led him on to fortune; and even under the great disadvantage of being subject to a strong deflecting force, his career was not unprosperous, and he joined with tolerable compactness the decisions of the engineer to the inquiries of the geologist."

In 1793 he was engaged in executing surveys and levellings for a canal, in the course of which an opportunity presented itself of testing the correctness of a speculation which had occurred to him, as a general law affecting the strata of the district. This was, that the strata above the coal were not horizontal, but all inclined in one direction towards the east, so as to terminate successively on the west, and to resemble, according to his own homely but forcible comparison, the position of the slices in a plate of bread and butter. This supposition he found confirmed,

by his levellings in two parallel valleys; in each of which the "red ground" (new red marl), the "lias," and "freestone" (oolite) sunk eastward below the level, and were succeeded by a higher rock.

He was, however, aware of the unconformable position of the coal strata of Somersetshire, with respect to the "red earth" and superior beds;—he was also aware of the *faults* or fissures by which they are traversed, and the fact that the strata above the coal measures are not affected by these *faults*.* These general laws—deduced from local, and, in part, exceptional phenomena—occasioned him no little perplexity, till—the Canal Bill having passed in 1794—the committee deputed two of their members, with Mr. Smith, their engineer, to make inquiries and observations respecting the trade and management of other similar undertakings in England and Wales. Their tour occupied nearly two months, and extended over nine hundred miles—the deputation reaching Newcastle by one route, and returning to Bath by Shropshire. The expedition fully confirmed his preconceived views, and showed that a settled order of succession, continuity at the surface, and an eastern dip of the strata, were true on the large scale; and from his knowledge, acquired by long-continued observation of the physical features and characteristic vegetation of the different strata, he was able, during a rapid survey made from a post-chaise, to recognize, in passing from York to Newcastle, the hills of chalk and oolite on the east, distant from five to fifteen miles, by means of their contours, and their relative position with respect to the lias and red marl occasionally seen upon the road. On no other evidence than this, he laid down, with considerable approximation to accuracy, on his map of the strata of England and Wales in 1800, the prolongation of the chalk and oolite of Wilts and Somerset through Yorkshire. The tour is thus described by himself:—

"No journey purposely contrived could have better answered my purpose. To sit forward in the chaise was a favour readily granted;—my eager eyes were never idle for a moment, and post-haste travelling only put me on new resources. General views, under existing circumstances, were the best that could be taken; and the facility of knowing by contours, and other features, what might be the kind of stratification in the hills, is a proof of early advancement on the generalization of phenomena. In the more confined views, where the

* The meaning of the term *unconformable* may be explained by extending Smith's illustration, and supposing another series of slices placed horizontally over the lower inclined set. The *faults* may be also explained, by supposing the lower set of slices cut across with a knife before the upper set were laid over them, and the divided portions of the slices elevated or depressed with respect to the corresponding portions of that to which each originally belonged.

roads commonly climb to the summits—as in our start from Bath to Tetbury by Swanswick—the slow driving up steep hills afforded me distinct views of the nature of the rocks—rushy pastures on the slopes of hills, the rivulets, and kinds of trees, all aided in defining the intermediate clays—while occasionally walking, to see bridges, locks, and other works on the lines of canals, more particular observations could be made. Much, however well observed, but depending upon memory, would of course be lost—for this was all foreign to the purpose of our journey—and also another important inquiry on coal and collieries, for which we had each by agreement provided an extra memorandum-book."

From Leeds—the northern limit of the collieries and canals—the party turned east to see York Minster, and the celebrated collieries of Newcastle. This gave Smith an opportunity, in crossing Tadcaster Moor, of seeing the magnesian limestone—a new rock to him, as it does not occur in the south. From the tower of York Minster he first descried chalk and oolite in the distant hills by the contour.

During six years Smith continued to be employed in setting out and superintending the works on the Somersetshire Coal Canal, in the execution of which he applied the knowledge he had acquired of the strata to the solution of such useful problems, as at what points to open quarries of good stone, where to choose the best foundations for bridges, how to intercept and conduct springs so as to economize the scanty supply of water for a line of canal running through a porous country. He had also valuable opportunities of extending his generalizations. Up to the present time he had gathered some vague notions respecting the distribution of organic remains in the strata. He had observed particular plants in the "cleft" above the coal, and particular shells in the lias and oolite; he had also observed their absence from the red marl; and from these facts he had been led to the conclusion, that "each stratum had been successively the bed of the sea, and contained the mineralized monuments of the races of organic beings then in existence." The necessity now imposed upon him of obtaining a more accurate knowledge of the different sorts of rock, sand, and clay, to be cut through, led him to examine carefully the distribution of the fossils which he had been accustomed to collect. This convinced him that "each stratum contained organized fossils peculiar to itself, and might, in cases otherwise doubtful, be recognized and discriminated from others like it, but in a different part of the series, by examination of them. He had also noticed the difference between the sharply preserved specimens imbedded undisturbed in the original matrix, and the rounded condition of the organic remains, derived from a variety of strata, and confusedly blended

in the superficial deposits. He was now (1795) twenty-six years old. Up to this period he had resided in the village of High Littleton, but he now removed to Bath, where he occupied a house in Cottage Crescent, whence, he said, his eye ranged "over the interesting expanse which extended before me, to the sugar-loaf mountain in Monmouthshire, and embraced all in the vicinities of Bath and Bristol; then did a thousand thoughts occur to me respecting the geology of that and adjacent districts continually under my eye, which have never been reduced to writing. Hitherto he had published nothing, though his nephew assures us written evidence remains that, in 1796, he had begun to arrange his thoughts on paper for publication, and, in 1797, had drawn out a larger and general plan for the proposed work. This tardiness in communicating his discoveries arose, we may suppose, partly from want of leisure, produced by constant attention to the works of the Company in a variety of localities, attested by his copious notes and memoranda, all bearing the date and name of the place when and where they were written, partly from want of training in composition, and consequent distrust of his powers for the work. During the short intervals which he could snatch from his principal occupation on the works of the canal, he employed himself in reducing to practical application his theoretical knowledge of the structure of the earth, and the properties of alternating porous and retentive strata in the hills near Bath, in the adoption of a new process of draining.

It is not surprising that so close an observer of nature should be disinclined to the speculations so prevalent at that time, when geological inquiries consisted of little but hypothesis; and it appears, accordingly, by memoranda which he has left behind him, that whatever of this kind he met with in the course of his reading, was submitted to close scrutiny and comparison with the phenomena of stratification, which he had so carefully studied.

"Every man of prudence and observation," he says in one of his papers, "who has paid strict attention to mineralogy, the structure of the earth, and the changes it has undergone, will be very cautious how he sets about to invent a system which nature cannot conform to, without having recourse to volcanic eruptions or uncommon convulsions, by which every hill and dale must have been formed, and every rock must have been rent, to produce those chasms which, in comparison with the strata they are found in, are no more than sun-cracks in a clod of clay; yet such has been the language of ingenious men, who have set their theoretical worlds agoing, without either tooth or pinion of nature's mechanism belonging to them."

In these opinions there is much that is sound, mingled with the error of making his own discoveries, in a limited region, the

standard by which he condemned inductions, quite as firm as his own, drawn from data equally correct, as applied to other regions. He had generalized from observations, commencing among the oolites, in the centre of the secondary rocks, extended downwards to the base of the fossiliferous series, and upwards to such of the tertiary strata as are to be met with in Britain. In these, together with the loose covering of the earth, long called diluvium, all the phenomena of geology were, according to his views, comprised. By these his geological horizon was bounded; and, to the close of his life, he set his face against those higher generalizations of subsequent observers, whose observations, extending over wider regions, embraced the formation of metallic crystalline rocks and metallic veins, the changes of climate indicated by the different organic groups, the upheaval of continents, and the effects of subterranean fire in modifying the surface of the earth, in present and past times. He had seen the oolites, but he had never seen a volcano; and, at the Dublin meeting of the British Association, at which it was our fortune first to meet the cheerful and communicative old man, we were not a little startled at hearing the Father of English geology, and the newly made Doctor of Laws, most confidently assert, in the course of conversation, that "fire had nothing to do with a volcano." There can be no doubt that, with his habits and powers of observation, had he been placed in an extensive district of igneous rocks, he would have learned to interpret the phenomena presented by them, as truly as those of the aqueous deposits to which his studies had been confined.

Some memoranda, written in 1796, show that, at that time, his mind was again strongly occupied with the subject of organic remains. His notes at this period also advert to the local distribution of existing plants and animals upon the earth's surface, and their connexion with particular varieties of soil. When occupied, at a subsequent period, (1799), in compiling a history of his discoveries, he naturally turned his mind to the examination of what had been previously done by others. Plots' Oxfordshire, Morton's Northamptonshire, and Woodward's Catalogue of Fossils, were eagerly studied by him, and from them his principle of identifying strata by means of their fossil contents, enabled him to elicit much valuable matter which would have been lost upon others, and to extend his coloured sketches for a geological map of England. In the drawings of ammonites and echinites in these works, he recognized many well known forms belonging to the lias and oolites of his own district; and thus obtained, in the localities from which they had been procured, fixed points for those rocks in districts which he had never visited.

"The most prevalent notion," says Professor Phillips, "which Mr. Smith found in the works which he could then consult regarding the forms and localities of organic remains, was the vague and irrational belief, founded on a misconception of the language of Scripture, but handed down to these days as if to demonstrate the indestructibility of popular error, that these relics of more ancient systems of life were all buried in the solid strata by the operations of the general deluge. These views appear never to have influenced the mind of Mr. Smith, who, in his MSS. of this period (1797-98) not only denies this unsatisfactory hypothesis, but places, in direct opposition to it, his views, that it is the gravelly deposits scattered over the earth's surface, and containing *bones of quadrupeds, and rolled and transported rock masses holding fossils which had been previously imbedded and petrified*, which should be ascribed to diluvial action."

These opinions respecting the loose covering of the solid strata, to which Buckland, Cuvier, and other eminent geologists, subsequently gave currency and popularity, have been shown by the light of new discoveries to have been quite as erroneous as those which attributed the fossiliferous strata to the deluge. There is no evidence that this loose covering, which, though not universally, is very generally distributed, was formed, comparatively recent as it is, within the human epoch. On the contrary, there is strong presumption, in the present state of the evidence, that it is older than our race.

The mammalian bones usually referred to as characteristic of this deposit, belong to extinct species of existing genera, or existing species not now living in latitudes which they once inhabited. They occur, however, immediately *below*, rather than *in*, these deposits, being found in fluviotile and lacustrine beds of the most recent tertiary period, associated with molluscs, nearly the whole of which belong to existing species. Many of these deposits, up to that period in the life of Smith of which we are treating, and even to a much more recent date, were confounded with the so-called diluvium, from which they have since been separated. This last deposit differs, in many important points, from any member of the tertiary series, and from the modern deposits which succeeded it, and it appears to be the result of peculiar agencies, closing the ancient order of things indicated by the fossiliferous series, and ushering in that condition of the earth to which we, and our contemporary tribes of plants and animals, belong. An opinion, first advanced by Agassiz, is daily gaining ground among geologists, that these peculiar agencies consisted of glacial action partly marine—as appears by the marine shells which it contains, and which, in Britain at least, were distributed over submerged land—partly due to terrestrial glaciers which then occupied the valleys of our

mountain chains, in which the rocks are striated and polished beneath these deposits, in a manner not to be distinguished from the effects of existing glaciers on the rocks over which they pass. Although this deposit is the first which we encounter in our passage from the present to the past state of nature, it is that with which geologists are the least acquainted; and though the glacial theory of Agassiz is now drawing attention to it, it has hitherto received much less study than it deserves. Some geologists have too hastily assumed its phenomena to be corroborative of their preconceived views as to its origin; others seeing in them stumbling blocks to their doctrines—that no forces of greater intensity than those now concerned in the ordinary operations of nature are to be admitted into geological dynamics—appear little disposed to make themselves acquainted with those peculiar characters by which it is distinguished from the aqueous deposits of the present and former epochs, and prefer to dwell only on those which it possesses in common with them. A knowledge of its true history would solve some of the most interesting questions in the history of the earth. With our present knowledge of the most recent tertiary strata, we are better prepared than in the days of Smith to enter on the investigation; and we may hope that, by similar diligence bestowed on its examination, its origin will be worked out as satisfactorily as that of the stratified rocks. It has been recently compared to a leaf torn out of the records of the earth.* We would describe it rather as a leaf written in different characters from those which preceded and followed. There are strong temptations to connect it with that state of the earth described in the second verse of Genesis, which our translators have rendered by the terms, "without form and void," if the signal failure of previous attempts to connect, first, the fossiliferous series, and, secondly, these superficial deposits with the deluge, had not given sufficient warning of the imprudence, in the present state of geological knowledge, of endeavouring to refer geological phenomena to events recorded in the Bible. All that can yet be affirmed of it with certainty, is, that it is extensively distributed over the temperate, as well as cold latitudes, of both hemispheres—that it appears to be absent from the equatorial regions—that no human remains or works of art have yet been found in or below it—and that, in Europe at least, whatever may be the case in America, none of the elephantoid mammals which inhabited that quarter of the globe in the period immediately preceding this deposit, have been found above it.

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* Edinburgh Review, July 1845. Article, Vestiges of the Natural History of Creation.

But to return to the history of William Smith, and his progress in discovery.

In 1798 he purchased a small estate near Bath, beautifully situated in a deep and wooded valley, which he improved with much taste, and which the canal traversed without injuring its beauties. In this favourite retreat he spent many happy hours, though the erratic life which the business of the Canal Company compelled him to lead, prevented him from enjoying any long continuous residence on it.

The termination of his engagements with the Company, in 1799, formed a new era in his life, not only setting him at liberty for the prosecution of his geological inquiries, but imposing on him the necessity of applying the knowledge already acquired, in such a manner as should make known his system, and provide funds for travelling through England and Wales, to extend his examination of the strata, and test the accuracy of his earlier observations. In the accomplishment of this double object he was successful. He soon acquired an extensive practice as a mineral surveyor, and in draining land, yet still, his fame and the knowledge of his discoveries were diffused, not by any actual and authorized publication, but by the exhibition of his maps of the strata at agricultural meetings, and the circulation of manuscript copies of tabular views of the succession of strata, so far as he had ascertained it, and by discussions and explorations with a few friends.

The friends who most interested themselves in these inquiries were the Rev. Benjamin Richardson, then living at Bath, and the Rev. Joseph Townsend of Pewsey, author of "Travels in Spain." Richardson possessed an extensive collection of fossils, collected chiefly by himself. He was acquainted with the views then held on the subject of fossils, but had no knowledge of the laws of stratification, or of the connexion of organic remains with the order of superposition. Smith, on the other hand, though rich in this knowledge, knew nothing—as is evident from the local names he used for his fossils—of their relations to existing organized types. He had obtained an introduction to Richardson for the purpose of inspecting his collection, and the result has been well described, by Professor Phillips, as an electric attraction, between two minds thus reciprocally adjusted, "the fossils which the one possessed, were marshalled, by the other, in the order of the strata, until all found their appropriate places, and the cabinet became a true copy of nature."

Richardson could not but acknowledge that certain fossils had been found in the strata to which Smith assigned them, but was not prepared to admit his generalization, that an invariable order

existed among the strata, and that the same stratum was characterized by peculiar fossils at great distances.

To convince him on this point, Smith proposed some field excursions, in which the truth of his theory should be tested. Townsend accompanied them. One of the points visited was Dundry Hill. From its form, and its position with respect to the lias, Smith expected to find it capped by the lower oolite, and containing the same fossils as those contained in the same rock near Bath. To their astonishment, his companions found his predictions verified; and though far superior to him in general literature and knowledge of natural history, they acknowledged him as a master who had thrown an unexpected light on dark and difficult questions respecting the earth's structure, and to the diffusion of this light they actively and zealously applied themselves. On one occasion, when the three friends had dined together at the house of Townsend, it was proposed that Smith's views respecting the strata, verified and improved by their joint labours, should be drawn out in a tabular form. From his dictation, Richardson wrote down the names and descriptions of the different strata, in the descending order, commencing with the chalk and terminating with the coal, below which the strata were not then sufficiently known to be admitted into the table. Opposite each stratum were placed the names, supplied by Richardson, of its most remarkable fossils, which were the names then current among collectors. Of this document—the original, in the hand-writing of Richardson, was presented in 1831 to the Geological Society—each of the party retained a copy, under no restrictions as to the use to be made of it; on the contrary, Smith, as Richardson has declared in a letter to Professor Sedgwick, at the time of the award of the Wollaston medal, with that liberality by which he was ever characterized, wished it to be communicated; and it was communicated to many both in England and on the Continent, who took an interest in geological inquiries.

This tabular view was regarded merely as an index of what Smith had to communicate on the subject of discoveries so novel and important, and for the purpose of diffusing more widely the knowledge of the strata which he had acquired by long study, he was introduced by his friend Richardson to Dr. James Anderson, then publishing "Recreations in Agriculture," who not only offered the pages of his work, as the medium for the promulgation of his discoveries, but proposed a pecuniary remuneration for his papers. In vain, however, Dr. Anderson claimed the promised communication. Professor Phillips appears to think that his uncle was too sensitive on the subject of his literary qualifications, and expected some assistance from the doctor in that respect.

Perhaps he found more profitable and congenial employment in his professional pursuits.

The wetness of the winter of 1799, and the consequent failure of the crops upon the clay soils, brought him a great accession of practice in the draining of land and in cutting off the springs by which numerous and extensive landslips were produced in the neighbourhood of Bath. Guided by the broad principles of the true theory of springs, which his geological knowledge afforded, he succeeded, at a subsequent period, in draining the Prisley Bog, belonging to the Duke of Bedford, in which the celebrated Elkington had failed, who had invented a system of draining applicable to a large class of boggy and springy soils, for which he received from Parliament a grant of £1000.

Mr. Stephens of Camerton, chairman of the Canal Company, and Mr. Crook of Sytherton, one of the best farmers of the Bath district, were the first encouragers of Mr. Smith in this new career; and for several years he was almost continually occupied in the draining and irrigating of land. The remuneration which he had received during his engagement with the Canal Company was one guinea a day, with an allowance for extraordinary expenses, and these were at first his terms as a draining engineer. From the year 1801, he raised them to two guineas a day, besides travelling expenses; and at a late period, to three guineas.

"Any other," says his nephew, "equally moderate in his personal expenses, and, like him, employed professionally every day for many years, would have at least escaped poverty; but Mr. Smith at no time abounded in money. The principal cause was the liberal, nay the lavish manner in which he expended his means in endeavouring to accomplish his favourite object—the Map of the Strata of England and Wales. For this end he walked, or rode, or posted, in directions quite out of the way of his business, and having thus emptied his pockets for what he deemed a public object, was forced to make up by night-travelling the time which he had lost, so as not to fail in his professional engagements."

The late Lord Leicester, having witnessed at Mr. Crooks' the successful results of Smith's draining operations, invited him to Holkham, employed him in a variety of works, recommended him to others, and not only appreciated his abilities for agricultural improvement, but took a warm interest in his scientific discoveries. In 1801, urged by the advice of his friend Richardson, who was apprehensive that his discoveries would be published by others, instead of emanating from himself, he issued a prospectus and proposals for a work entitled "Accurate delineations and descriptions of the natural order of the various strata that are found in the different parts of England and Wales, with practical observations thereon." This prospectus was extensively

circulated, the subscription list began to fill, Debrett was chosen as the publisher, a small manuscript map of England, to accompany the work, was put into his hands to be engraved, and Mr. Richardson urged the propriety of the simultaneous publication of a Latin edition, for the benefit of all Europe, and to prevent any pirated French edition.

In the summer and autumn of 1801, Smith was introduced to Sir Joseph Banks and the Duke of Bedford, both of whom became his zealous friends and patrons. The Duke not only gave him much employment in draining and irrigation, but encouraged and assisted his geological investigations. He directed that an exploration of the margin of the chalk hills, south of Woburn, by Smith and Mr. Farey, his land-agent, accompanied by Mr. Bevan of Leighton, for the purpose of reporting on the correctness of his views respecting the strata, should be undertaken at his expense. During this expedition, Smith astonished his companions, as he had before astonished his friends Richardson and Townsend, by a verified prediction of the nature of the fossils which would be found in the strata at the base of those hills.

The Duke of Bedford being now convinced of the truth and reality of Smith's discoveries, ordered a stratigraphical collection of rocks and fossils to be formed at Woburn, and proposed to undertake the chemical examination of them. This Smith considered the most auspicious period of his life, and the plan formed by the Duke, for making himself and others acquainted with the nature and results of his researches, just such as he wished to carry into effect. The sudden death of the Duke, however, clouded these bright prospects, and delayed indefinitely the publication of the proposed work to which a final stop was put by the embarrassments of Debrett.

In the meantime, copies of the tabular view of the strata, drawn up in MS. in 1799, had become extensively circulated; and while the unpublished discoveries of Smith were thus known to many, nothing but the most praiseworthy forbearance on the part of those who had turned their attention to the examination of the geology of Britain, saved him from the annoyance of being anticipated in his map, by some inferior compilation, and by notices of his discoveries, which his wandering life and professional occupations rendered it difficult for himself to prepare. To such an ungenerous appropriation of the results of his labours he was not, however, exposed, at a time when the most meagre attempt at a delineation of the stratification of the British isles, or of any considerable portion of them, would have been well received, and would have been productive of fame, if not profit, to the editor. On the contrary, Mr. Townsend presented him with drawings of some of the fossils, in his own and other col-

lections, most characteristic of the strata in which they occur, for the purpose of illustrating his work. Mr. Richardson and other friends forwarded him notices of observations made in the course of their journeys, and Mr. Farey, who had quitted his situation at Woburn, and was profiting by the knowledge he acquired from Smith, to practice as a mineral surveyor, lost no opportunity of asserting the priority and importance of Smith's discoveries, and of urging their immediate publication. The brother of Duke Francis, who succeeded to his title and estates, continued to take interest in Smith's pursuits; the project of a geological museum at Woburn was not wholly abandoned; and after Debrett's failure, new hopes arose from the patronage of Sir Joseph Banks and Mr. Crawshay, in addition to that of the Duke of Bedford and Mr. Coke. Mr. Crawshay proposed not only to aid the publication of the result of Smith's researches by pecuniary assistance, and by securing the co-operation of his friends, but undertook to induce a competent person to arrange and prepare for the press his voluminous and too desultory papers. The Duke recommended him to Arthur Young and the Board of Agriculture, before whom he explained, in 1803, the progress he had made in the examination and mapping of the strata of England and Wales, and the application of geology to agriculture, and he was desired to prepare some specific proposal for bringing his discoveries before the public. At the Woburn sheep-shearing, the following year, Sir Joseph Banks, after hearing similar explanations, declared them to be of so much importance that the world must have them; and that Smith's unaided means were inadequate to the production of either map or book. He therefore drew up a paper for circulation among the visitors, expressive of his sentiments on the subject, put down his name as a subscriber for one hundred pounds, and presented him with a cheque for fifty pounds as the first half of his subscription. The project, however, went no further. A plan for joining Smith to the corps of engineers employed on the Ordnance Survey was proposed at the Board of Agriculture, but fell to the ground. The Government and the public, though induced after a lapse of more than thirty years, to undertake a geological survey of Great Britain, were not ripe for it then. The British Association has done much to rouse both to an appreciation of the economic value of science, and to smooth the rugged path of discoverers like William Smith. He himself has not escaped censure for the failure of this second attempt to publish the results of his labours, which have been attributed to habits of procrastination, which induced him to postpone, in favour of a reckless and insatiable thirst for fresh discoveries, the task less congenial to him of preparing for publication the results already obtained.

His nephew pleads in his defence the incessant professional exertions and constant travelling, extending to ten thousand miles a-year, which added to the mass of accumulated knowledge of the strata, and swelled his voluminous notes, without leaving him time for arrangement and condensation. His fossils, too, were at Bath, his papers in London; and a fire, which broke out in the house where the latter were deposited, caused them to be removed in a hurry and in disorder. To remedy these inconveniences, he engaged a large house in Buckingham Street, Strand, where his collection and maps were publicly exhibited, and where, for some time, he employed an artist in making drawings for the engraver. In a letter to Mr. Crawshay in 1805, he says—

"Every body agrees that the mass of information which I have collected is very great, and likely to be of public utility, but I find more difficulty in bringing it to market than I expected. Mr. Townsend, who has very liberally furnished me with the drawings of all his fossils, has informed me that it will not cost less than three thousand pounds to bring out the publication in two quarto volumes, which, he says, cannot be sold for less than six guineas. The expense of such a publication is too great for my circumstances, and the price of the work will probably preclude many from becoming purchasers, and there seems to be a tardiness amongst many of the great personages who were expected to subscribe very liberally, that makes me loth to engage with proper persons to engrave more of the plates, unless I could be sure of defraying the expense."

Professor Sedgwick, in his address to the Geological Society in 1831, on the occasion of the award of the Wollaston medal, made the following remarks on this subject:—

"Why his hopes of patronage were disappointed, and why his works were so long retarded, not by any want of zeal on his part, but by want of assistance from the public, it is not for me now to inquire. The fact, however, is not difficult of explanation. At the time his prospectus made its first appearance, none of the magnificent discoveries of Cuvier and Brongniart were, I believe, published; the Geological Society of London had no existence; the branches of natural history connected with secondary geology were but little cultivated, and not much known in this country; and hence some persons, perhaps, doubted the reality of Mr. Smith's discoveries, on a subject they had been taught to regard as empirical; and the public at large took but little interest in what they did not understand. He suffered, therefore, as many men of genius have done before him, for that which, in our estimation, constitutes his chief honour, from outstripping the men of his own time in the progress of geological discovery."

In 1806, Smith at length made his *debut* as an author, by the

publication of a treatise on the construction and management of water meadows. The Society of Arts had conferred their medal on him, in 1805, for the drainage of the Prisley Bog, which had been his chief employment during his first visit to Woburn in 1801; a full description of the process employed is given in the above treatise on irrigation, for it was by irrigation in conjunction with drainage that he had converted a worthless swamp into valuable meadows. Another of his achievements about this time was the stoppage of the sea breaches in the barrier of sand hills, between Happisburgh and Winterton, on the coast of Norfolk, which form the only defence to more than forty thousand acres of valuable land in the valleys of the Yare and the Waveny, lying below the level of high water, and commanding only a very limited fall at low water. From this tract, which in Roman, if not Saxon times, constituted a broad estuary, the sea had been excluded by the gradual accumulation of these sand-hills, and by the obstructions caused at the outfall of the rivers, by the ruins of the wasting cliffs of clay and sand, between Weybourne and Happisburgh, borne to the S.E. by the force of the tidal current. Storms of unusual violence occasionally broke through the weakest points of this barrier. In 1801, the collective length of the breaches exceeded a mile, and the sea was re-asserting its dominion over seventy-four parishes in Norfolk, and sixteen in Suffolk. Three years were spent by Smith in fruitless endeavours to persuade the Commissioners who had the care of these marshes to abandon defences of masonry and timber, and to resort to others more in accordance with the operations of nature. At length he persuaded some of them to accompany him to the sea-shore, where he pointed out the superior efficacy of sloping banks of sand and pebbles in particular directions to resist the fury of the sea, over solid constructions, and caused them to exclaim, "Oh, that none of us should have thought of this before!" Having now permission to adopt his own plans, the breaches were closed in little more than one summer, and the German Ocean now spends its fury harmlessly on Smith's unresisting slopes.

Another of his triumphs was the restoration in 1810 of the hot-wells at Bath, which had failed. After much opposition, he was allowed to open the spring to its bottom, when he detected the channel by which the waters escaped, succeeded in stopping it, and thus secured to Bath its jeopardized prosperity. The escape of the Bath waters was attributed at the time, and with some probability, to the opening of a colliery at Batheaston, distant three miles, which was inundated by an influx of water, said to be of a high temperature. Here he succeeded in plugging the bore hole at the bottom of the pit, through ninety feet of water. The

works, however, were subsequently abandoned, perhaps from fear of the injurious effects they might produce on the hot-springs of Bath.

In 1812, an agreement was entered into by Smith with Mr. Cary the engraver, for the publication of his long-expected Map of the Strata. A crisis had arrived which rendered exertions to bring it out more necessary than ever, and showed that, if his discoveries were to be published at all as his, they must be published speedily. Other active and energetic labourers were in the field, with the advantage of knowing the results of his labours. The Geological Society of London was founded in 1807 by those who took the most interest in investigating the mineral structure of the earth, and who, wearied at length with the Neptunian controversy in which they had so long been fruitlessly engaged, and convinced that they were not yet in possession of sufficient data for the construction of a true theory of the earth, associated themselves for the purpose of observing phenomena without reference to hypothesis, and of thus collecting materials for future generalization. What they now proposed to do, Smith had long been doing. While they were disputing about systems based only upon hypothesis, or at the best on too narrow an induction, he was slowly and laboriously collecting facts, and founding on them those safe and limited generalizations which they warranted. While the Wernerians would recognize no rock which could not be brought into accordance with the classification and nomenclature of Freyberg, he had determined the order of succession of the whole secondary series of England, down to the coal formation. While they set up mineral characters and the angles made by the planes of crystals as the only standard for determining the age of rocks, he ascertained that organic remains, called by them extraneous fossils, were an unerring test for the identification of distant parts of the same stratum, under a change of mineral type. The application of this principle, in other hands, has disentangled the intricacies of a vast mass of fossiliferous strata below the coal measures, and has established above the chalk a long sequence of deposits, exhibiting a gradual zoological passage to existing animal and vegetable species. Sinking minor differences of stratification and organic remains, once too much insisted on, but now proved to be merely the effects of local agencies, it has been found, that the classification thus established in England and the neighbouring countries, is applicable not only to the whole of Europe, but to every portion of America, Asia, and Africa, yet geologically explored. In all these distant regions, certain groups of fossils are found, occurring in the same invariable order of succession, however the composition of the matrix in which they are imbedded may differ. The same families and genera, for in-

stance, occur in the chalk of England and the sandstone which represents it in America.

While the land-surveyor of Oxfordshire was engaged in a career of research so different from that followed by the most eminent mineralogists of the day—the terms geology and geologist were then hardly known—it is not surprising that they should have overlooked the merit of his labours. Bakewell, who called himself of the School of Smith, has recorded, in the preface to the second edition of his Introduction to Geology, published somewhat later than the period of which we are writing, that a professor in one of our Universities being asked what he thought of the views advanced in that work, replied—"I wonder where the fellow got his information;" adding rather contemptuous expressions with regard to one who was not a "well-educated geognost," which means, says Bakewell, one who observes nature with his own eyes, and will not be satisfied to see it through the spectacles of Werner.

While some of his earliest friends were admitted as honorary members of the Geological Society, Smith was passed over unnoticed, except by visits from Mr. Greenough, the President, and a few of the members, to his house in Buckingham Street, to inspect his collections, maps, and sections. Besides the formation of the Society, there were other excitements to exertion for the publication of his map and description of the strata. Sowerby had begun to prepare drawings for his Mineral Conchology of Great Britain. Farey, under the patronage of the Board of Agriculture, brought out a mineral survey of Derbyshire in 1811, and in 1812, Smith's friend, the Rev. Mr. Townsend, published his "Character of Moses vindicated as an Historian." With all these powerful incitements to immediate publication, the resources of Smith, notwithstanding the aid they received from Sir Joseph Banks, and a few other liberal patrons, would have been unequal to the preparation of a large and costly map, but for the courage and resolution of Mr. Cary—the enterprize of a private tradesman thus accomplishing that which had been hoped for in vain from public boards and the patronage of the noble and the wealthy landowners of Britain.

On the map of this engraver, which had long enjoyed a high reputation, Smith had been accustomed to record his discoveries, laying down only those points, and drawing in those lines, which had been actually observed. It was found, however, impossible to give the necessary details of a complete geological map on one so crowded with political names and divisions; and Mr. Cary, accordingly, undertook the drawing and engraving of a new map, in which natural divisions should be substituted for these, and on which should be exhibited the numerous small streams which

form so important a feature in physical geography. During the two following years, Smith was occupied in the work of completing his map, and in professional occupations, which supplied the necessary funds. Unexpected difficulties arose in the details of so novel a work as the engraving and colouring of a geological map, but these were ultimately overcome. In 1814, some portions were coloured, particularly four sheets, comprising the country in the vicinity of Bath; and Smith was exhibiting and explaining these before the Board of Agriculture, and its president, Lord Hardwicke, while the Allied Sovereigns were entering London. In the spring of 1815, a complete coloured map of the strata of England and Wales was submitted to the Society of Arts, and received the premium of fifty pounds, which they had for several years been offering for such a work. On the 1st of August, in the same year, it was published, with a dedication to Sir Joseph Banks. Smith's fame as an original discoverer was now secure.

"Would," says his nephew, "that this period of revived and enlarged reputation, had also been the dawn of more prosperous fortunes; or that, satisfied with the degree in which he had accomplished his gigantic task, he had left to others the completion of his work, and devoted himself for a time to even the humblest of those professional labours, by which he had been at least supported through oppressive difficulties, and by which he must already have grown comparatively rich, but for the incessant drain of money in following up discoveries, which no living man could reasonably hope to complete. If this be censured, as the scholium of a feebler mind, and less fervid temperament than that which led Mr. Smith through his mighty enterprize, some allowance may be made for the feelings of the writer, who, in this year, at too early an age, began to enter the shadow of those calamities in which his revered relative was plunged."

To the embarrassments arising from the expenditure of his professional gains in the completion and publication of his discoveries, and from the too frequent neglect of his employers, in delaying the payment of his professional services, were added those arising from an unsuccessful speculation. In an evil hour he had been tempted to lay a railway through his little property near Bath, for the purpose of bringing the freestone of Combe down to the coal canal—to open new quarries—and to establish machinery for sawing and shaping it. The project, which promised well at first, failed from the exhaustion of the quarries. The compulsory sale which followed, of this estate, so dear to him, left him still involved with a load of debts, and the sad consequences fell on others as well as himself. To relieve his difficulties he proposed the sale of his geological collection, which the Government purchased of him for the British Museum. The

total sum paid him was seven hundred pounds: five hundred in 1816; another hundred pounds in 1818, for an additional collection from North Wilts, Essex, &c., to complete the series; and one hundred pounds for the trouble of arranging and making a catalogue of them. The number of specimens was 2657, comprising, it was supposed, 693 species. There was a difficulty in making these specimens—which were arranged on sloping shelves to represent the strata—part of the collection open to the public. The authorities of the museum assigned to the collection first one apartment, and then another; and now the state of this, the first stratigraphical collection ever made, is unknown. If not destroyed, it is to be hoped they will be rescued from obscurity, and transferred to the more appropriate resting-place of the Museum of Economic Geology in Craig's Court, in company with the Mantillian collection of Sussex reptiles, since purchased by the nation, which appears to be doomed to a nearly similar fate in its present abode. A portion of the descriptive catalogue of the collection purchased for the British Museum was published in 1817, under the title of a "Stratigraphical System of Organized Fossils," with coloured tables, shewing the geological distribution of particular groups. In the same year was also published the first number of a work, which it was purposed to complete in seven numbers, consisting of numerous figures of fossils, engraved by Sowerby. The title of it was, "Strata identified by Organized Fossils." From the expenses of publication, and the slight encouragement it received, it never advanced beyond the fourth number. At the same time commenced the publication of a series of county maps, coloured on the plan of the map of the strata of England and Wales, but carrying out the delineation of their boundaries in greater detail. The series comprised twenty-one counties, including Yorkshire.

In the year 1818, Dr. Fitton, in an article in the Edinburgh Review, entitled "Notes on the progress of English Geology," fairly and fully advocated the claims of Smith as a great original discoverer in geology, and thus laid the foundation of their recognition in 1831, by the Geological Society and the British Association. Dr. Fitton, in the same paper, did ample justice to those early observers who had preceded Smith, and whose names were fast sinking into oblivion, showing how nearly they had approached to a true knowledge of the true laws of stratification, and how far they had come short of it, before the path of discovery was lost in the speculations of Burnet, Whiston, and Whitehurst, to be only partially regained by Woodward, and very nearly attained by Michell.

In the winter of 1818-19, Smith visited Churchill, to re-

examine the spots where he and his boyish companions had collected "pundibs" for marbles, to talk with some of its old men over the tales of local wonder which had astonished his boyhood, and to laugh with boyish glee at those which were of a humorous cast—to muse on his altered views of geological phenomena—to muse, perhaps, on the changes which had come over his native village and himself since he quitted its homely pursuits for a life of toil and wandering in the pursuit of fortune and of science. He had sold his humble paternal roof, and the acres which his forefathers had owned for at least two hundred years, and had expended the proceeds, with a large portion of his professional gains, in the accomplishment of a national work; and while he, in the pursuit of this object, had reduced himself to poverty, but earned imperishable fame, his brother, following in his native village the humble pursuits of trade, had become a rich and prosperous man.

"Many changes had come over that village: one of the largest and most honoured elms had fallen; the great common field was but a name; it could no longer be said, as previous to the inclosure in 1787—might have been at least poetically said—that

'Every rood of ground maintained its man.'

The yeomanry had sold their 'yard-lands,' and been transformed into tenantry renting the broad acres of the squire. 'Times were altered:' there was no longer a treasurer for the 'Whitsun-ale;' but the 'wake' was still a scene of merriment, to which, among other idlers, the gypsies still gathered from 'the Forest' of Whichwood; and Mr. Smith yet found, among the old inhabitants, some who would remember the digging of Sarsdere pond with its 'golden' stones (iron pyrites), and the ornamental planting of Daylesford by 'Governor Hastings,' and laugh with him over the marvellous tales of 'horses having run their feet off' in dragging the 'fly coaches' on the Oxford road at a pace inconceivable to the slow Saxons of the 'Cotteswolde Hilles.'"

Smith's financial difficulties did not end with the sale of his estate near Bath. In the autumn of 1819, he was compelled to submit to the sale of his furniture, the remainder of his collections, and his books, only preserving his maps, sections, drawings, and papers, through the kindness of a friend. "One more used to monetary transactions would," his nephew says, "have foreseen and averted the blow." He was in Yorkshire when it happened, "busily engaged, apparently oblivious, perhaps sternly regardless, of what seemed to others an insupportable misfortune. He deemed it an inevitable corollary to his irretrievable losses in the unlucky speculation near Bath, and armed himself with what seemed more than fortitude to bear it." He now quitted London, and became for seven years a wanderer, without a home,

in the North of England, occupying himself with explorations for the completion of some of his county maps, and with such professional business as still sought him out in his most lonely retreats, and yielded him a scanty and fluctuating income. His principal places of rest during these seven homeless years were Scarborough and Kirby Lonsdale. It was during this period that the Father of English Geology became acquainted with some of his most worthy sons. To Dr. Buckland he was introduced in 1820, at the house of Mr. Bliss the bookseller, when passing through Oxford on a pedestrian tour to London. Mr. Murchison visited Scarborough in 1826, and Smith accompained him in a trip by boat to Whitby, pointing out the principal results of his comparison of the oolites and lias of Yorkshire with those of the South of England, receiving not long after, with much gratification, Mr. Murchison's Memoir on the more northern oolite coalfield of Brora. His introduction, while residing at Kirby Lonsdale, to Professor Sedgwick, then examining the vicinity, was highly characteristic. The stone-masons of the village had remarked his curious habit of trying the hardness of the stones with his teeth, and concluding, by the ponderous hammer which the Woodwardian Professor carried, that they were "of the same trade," brought the two geologists together. One of the most important professional engagements of Mr. Smith at this period, affording a convincing proof of the value of geological knowledge in the solution of practical problems, was the survey of the estates of Colonel Braddyll, which ended in the opening of the South Helton Colliery. This valuable work owes its existence to the perseverance of the proprietor in trials, undertaken on the strenuous advice of Smith, founded on geological data, in opposition to the dogma of "no coal under the magnesian limestone," the cherished error of the most eminent coal viewers of the north, "practical" men who are guided only by their own limited experience, unaided by general principles deduced from more extended observation. Smith hoped to have had the superintendence of the execution of the work, which would have had no existence but for his honest and fearless recommendations. In this, however, he was disappointed. The means which were adopted at his suggestion to procure a supply of water for Scarborough, presented another instance of the economic value of his pursuits.

So deep in general was his seclusion during his abode at Kirby Lonsdale, that he only heard by indirect means, and not till long after the date of the application, that an urgent official demand had been made from Russia for his services as a mineral surveyor.

In consequence of an acquaintance formed with one of the re-

sidents at that romantic village, Smith was engaged in 1824 to deliver a course of lectures on geology before the Philosophical Society of Yorkshire, which led to similar engagements in conjunction with his nephew, with the Philosophical Societies of Hull and Sheffield. Shortly before he lectured at the latter place, he had been attacked by a rheumatism or paralysis of the lower extremities brought on by over exertion in exploring some of the peculiarities of structure in the Scarborough Cliffs. He nevertheless accepted the engagement while he was incapable of walking, and was actually lifted into the carriage which conveyed him to the lecture-room.

"It was a singular spectacle," says his nephew, "to witness the delivery of lectures which required continual reference to large maps and diagrams, by one who could not stand, but was forced to read his address from a chair, to an audience of several hundred persons, in a room not very well adapted to the voice. But it was far more extraordinary to witness, during all the severity of the disorder, the unpretending patience and fortitude of the sufferer, who, had he then permitted his mind to dwell too curiously on the state of his health, and the state of his finances, might have added the bitter foretaste of want and privation to the actual difficulty of the moment. Such reflections, and such anticipations, might sadden the hearts of those who surrounded him, but he would have thought it unworthy of his resolved mind and firm trust in Providence to have abated one jot of his accustomed cheerfulness, shortened one of the innumerable playful stories which were always on his lips, from the rich treasure-house of his memory, or turned his meditations from their favourite subjects."

With the departure of the malady, from which he slowly recovered, his days of adversity likewise departed. About this time he gained the friendly regards of Sir John V. B. Johnstone of Hackness, which he retained to the close of his life. That gentleman being desirous to secure, for the improvement of his estates, the union of practical and theoretical knowledge, of which Smith possessed so much, engaged his services as his land steward. In this capacity he resided at Hackness from 1828 to 1834, and these his nephew regards as the happiest and calmest days of his life. His kind friend and patron flattered himself that the leisure which this comparatively easy employment afforded, would have been employed in preparing for publication a review of the circumstances of his life, and the arrangement of his observations and opinions. In this, however, he was disappointed. Smith wrote much, and meditated more, but arranged nothing; and a beautiful geological map of the Hackness estate, executed in great detail, was the only work he gave to the public.

Honours now began to flow in upon him. Dr. Wollaston had

invested one thousand pounds in the joint names of himself and the Geological Society, and directed that after his decease the dividends should be employed in such manner as the Council might think proper in promoting researches, and in rewarding those by whom they should be made. In fulfilment of these instructions, the dividends of the first year were appropriated to the acquisition of a die by Wyon, bearing the impress of the head of Dr. Wollaston; and, in January 1831, the Council resolved that "the first Wollaston medal should be given to Mr. William Smith, in consideration of his being a great original discoverer in English geology, and especially for his having been the first to discover and teach the indentification of strata, and the determination of their succession by means of their imbedded fossils."

On Professor Sedgwick, who then filled the President's Chair, devolved the office of announcing this award at the ensuing general meeting of the society. After giving a brief sketch of Smith's career, he expressed himself in the following terms:—

"I for one can speak with gratitude of the practical lessons I have received from Mr. Smith; it was by tracking his footsteps, with his maps in my hand, through Wiltshire and the neighbouring counties, which he had trodden nearly thirty years before, that I first learned the sub-divisions of the oolitic series, and apprehended the meaning of those arbitrary, and somewhat uncouth, terms which we derive from him, as our master, which have long become engrafted into the conventional language of English geologists, and, through their influence, have been in part adopted by the naturalists of the Continent.

"After this statement, gentlemen, I am entitled to speak boldly, and to demand your approbation of the Council's award. I could almost dare to wish that stern lover of truth, to whose bounty we owe the donation fund—that dark eye before the glance of which all false pretensions withered, were now amongst us; and if it be denied to hope that a spirit like that of Wollaston should often be embodied upon the earth, I would appeal to those intelligent men, who form the strength and the ornament of this Society, whether there was any plea for doubt or hesitation, and whether we were not compelled by every motive which the judgment can approve, and the heart can sanction, to perform this act of filial duty, before we thought of the claims of any other man, and to place our first honour on the brow of the Father of Geology.

"If, in the pride of our present strength, we were disposed to forget our origin, our very speech would bewray us, for we use the language which he taught us in the infancy of our science. If we, by our united efforts, are chiselling the ornaments, and slowly raising up the pinnacles, of one of the temples of nature, it was he who gave the plan, and laid the foundations, and erected a portion of the solid walls, by the unassisted labour of his own hands."

The medal, completed in 1832, was delivered to Smith at

Oxford, in the presence of the British Association, whose second meeting was held within the walls of that University; and he received, at the same time, the gratifying intelligence that the Government, on the recommendation of the Association, had granted him a more substantial reward in an annual pension of one hundred pounds.

In 1834 he relinquished his situation at Hackness.

"I was weary," he says in a paper dated Scarborough 1839, "of nothing but farming concerns, and told my good friend Sir John Johnstone, that I wished to leave it, and that as the last five or six years of a man's life were seldom good for much, I wished to have them to myself, provided I lived so long, to complete and arrange my papers, without the interruption of any business, to which he readily assented, and allowed me twenty pounds a-year for occasional advice and assistance."

Many papers, however, bearing the date of Hackness, show that he had sufficient leisure there for the arrangement of his papers, had he been capable of using it for that purpose.

His mode of life at Scarborough, to which he now removed, is thus described by his nephew:—

"Buried in the seclusion of his study, full of his own maps and manuscripts, or wandering beneath the cliffs, whose geological structure he was the first to comprehend, his mind was strung anew, and it might have been expected that the thousands of facts which his memory retained should be methodized into laws of phenomena, and the characteristic and unusual inferences which he expressed on the theory and economical applications of geology, have acquired a systematic form. Such were his own expectations, and it was owing rather to a discursive habit of mind, an excessive activity of observation, which seized upon, and gave temporary importance to every novelty, than to any want of industry and decision of judgment, that these apparently well-founded hopes were not fulfilled. Papers which required arrangement and condensation were augmented, and connected with new trains of thought; and as if the ordinary forms of expression were inadequate to match the vividness of his ideas respecting the structure of the earth, his thoughts on stratification were often clothed in humorous, if not always harmonious verse.

"Those to whom this play of fancy was revealed easily abandoned the belief that Mr. Smith's geological principles would ever become fully known through his own exertions; and as no inducement could persuade him to intrust to others the task which he felt it was his duty to accomplish, the case became, from year to year, more desperate, as the observations lost more and more of their freshness, and the generalizations of their novelty. Mr. Smith mixed too little with younger geologists to make the discovery, that, on the road which he opened, were racers more swift than himself, and few of his friends could undertake the painful task, of proving to him the unpleasant

truth, that the piles of manuscript, in which he fondly hoped that both fame and fortune were secured, were rapidly losing their value, as contributions to science, and articles of trade."

During Smith's residence at Hackness and Scarborough, he seldom went far from home, except to pay occasional visits to London, and to attend the meetings of the British Association. In London, to which he always carried large parcels of manuscript, his time was spent much in the same manner as at Scarborough. In the discussions of the Geological Society, and of Section C of the Association, he rarely took part except to mention some striking fact. His deafness, the only infirmity of age with which he was troubled, would have been a great impediment to this. But there were others. The geologists of this period were as much in advance of him, as has been already intimated, as he was in advance of his contemporaries thirty years before. Some of their higher generalizations furnished by more extended observations than his own—for he would take facts on no other authority—or derived from the aid of the collateral sciences of chemistry, botany, zoology, and mechanics, found no favour with him, and the want of early training to debate rendered him unequal to the intellectual encounter with such formidable opponents, to which the expression of his opinions would have exposed him.

The recurring anniversaries of the British Association were to him periods of great delight. His nephew has compared their effects on him to those of returning spring on the vegetable world. Besides the pleasure derived from the respect with which the presence of the Father of Geology was hailed in the Geological Section by its most eminent men, and the kind attentions he received from new and agreeable acquaintances with whom these erratic reunions brought him in contact, they frequently led one who had wandered so much over England, to old scenes, and the society of old friends. At the Dublin meeting in 1835, Dr. Lloyd, the Provost of Trinity College, and some of the most distinguished of the Fellows, vied with one another in kind attentions to him, and the University conferred on him the unexpected compliment of an honorary degree. It was now no small gratification to the veteran geologist to be addressed as Dr. Smith, and his friends, amused and pleased with the foible, took every opportunity of increasing the enjoyment. Dr. M'Lean, the Dean of the College, and Captain Portlock, the director of the geological survey, found pleasure in conducting him to scenes of geological interest. His mind was then occupied with questions of drainage and agricultural improvement, of which he was so thoroughly master; and Ireland, which

stands so much in need of both, would perhaps have derived benefit from his experience, but for the death of his friend, Dr. M'Lean. The inhabitants of Bristol sent him a special invitation to attend the meeting held in that city in 1836, and defrayed the expense of the journey; and then he renewed his acquaintance with the widow of his old friend, Richardson, and the daughter of the Rev. J. Townsend.

It was on his way to the Birmingham meeting of the Association in 1839, that he died. He had been associated in 1837-8 with Sir Henry De la Beche and Mr. Barry, in the commission for selecting the stone to be used in the erection of the new Houses of Parliament; and his knowledge of nearly all the quarries of building stone in the kingdom, was found of great benefit in the inquiry. Five days after the signing of the Report, he attained his 70th year, apparently in such vigorous health as promised years of prolonged life, if not of activity. After spending a few days with Mr. Barry in examining the quarries at Worksop, selected by the commission, he returned to Scarborough, in the neighbourhood of which he remained till July, chiefly occupied in walking over the Hackness farms. He then proceeded to London, attended the meeting of the Agricultural Society in Cavendish Square,—was occupied the following day with Mr. Pusey, one of its prime movers—attended the great meeting of the same Society, held shortly afterwards at Oxford, and after spending a few days at Nuneham, with the family of the Archbishop of York, from whom, for twenty years, he had received unvarying proofs of regard, revisited for the last time his rural friends at Churchill, and returned to London on the 9th of August. The meeting of the Association, to which he had received a special invitation, was fixed for the 26th, at Birmingham. On his way to it, he stopped at the house of his friends, Mr. and Miss Baker, at Northampton, examining their beautiful collection of Northamptonshire fossils, and gratified with excursions round the neighbourhood. Here he was attacked by a cold, which appeared of more consequence to his friends than to himself, particularly when diarrhœa supervened. Unaccustomed to illness, he reluctantly had recourse to medical advice. On the 26th, Professor Phillips was summoned from his official duties, as Secretary of the Association, to the death-bed of his uncle, who, calm and cheerful as usual, continued gradually to sink till the morning of the 28th, when he expired. His remains are deposited at the west end of the church of All Saints, at Northampton, in which, at the suggestion of Dr. Buckland, a tablet is to be erected to his memory by the subscriptions of geologists.

The person of William Smith was of large and athletic pro-

portions. Hardy himself, and sprung of a hardy, healthy, and long-lived race, and accustomed to strong exercise, he enjoyed, for the most part, robust health, though he suffered once or twice in the course of his life from ague and diarrhœa, caught by exposure to cold and wet. He never wore a great-coat, and spurned the use of gloves. The mental qualities for which he was most distinguished, were those of observation and memory, joined with firmness, which assumed, according to circumstances, the character of courage and resolution in professional and scientific labours, or cheerful and patient resignation under affliction. His appearance, air, dress, and manner, bespoke him what he was,—the sturdy, honest, warm-hearted, intelligent English yeoman,—a race, in its proper sense, now nearly extinct, but which has furnished, in its day, some of the most illustrious names in the intellectual annals of our country.

The order of succession of the strata, from the chalk to the coal measures, he may be said to have re-discovered, for Michell, Smeaton, and Cavendish, were aware of it, though they had not published the discovery; and Werner, independently and simultaneously with Smith, ascertained the order of succession in a part of Germany. The limitation of particular groups of organized bodies to particular strata—the successive existence of different organic groups on successive beds of the sea—and the distinction between the regular strata and the so-called diluvium, were discoveries exclusively his own.

Let those who persist in the exploded error, that the whole of the fossiliferous series, with all their extinct groups of organic remains, are the result of the deluge, or were formed since the creation of man, remember, that those eminent geologists on whom we have lately seen so much senseless vituperation lavished, commenced their geological career with attempts to explain the phenomena of the earth in accordance with the same views, and were compelled, by the force of facts, not taken at second-hand, but observed with their own eyes, to admit the truth of Smith's induction. Every subsequent observation has confirmed it, and makes larger demands for the time required for the operation of those mechanical, chemical, and vital agencies, from which have resulted a series of deposits, whose average collective thickness cannot be less, on the lowest computation, than six miles. Let those, also, who deny the economical value of geological knowledge, remember the many instances we have enumerated—and we might have added many more—in which it was applied by Smith with such signal success, in aid of some of the arts most useful to mankind—agriculture, mining, engineering, and architecture.

ART. V.—1. "*Ironmaking*" *and* "*Smelting*," *in the Encyclopædia Britannica.* 7th Edition.

2. *Report of Trial* in causa, *James Beaumont Neilson and Others against the Househill Coal and Iron Company.* Edinburgh, 1842.

3. *Report of Trial* in causa, *James Beaumont Neilson and Others against William Baird and Company.* Edinburgh, 1843.

4. *First Report of the Childrens' Employment Commission* (*Mines*), *and Appendixes thereto.* London, 1842.

5. *Report of Special Commissioner on the State of the Population in the Mining Districts.* London, 1844.—*Report of do. do.* London, 1845.

"GEOLOGY, in the magnitude and sublimity of the objects of which it treats, undoubtedly ranks, in the scale of sciences, next to astronomy." This remark of Sir John Herschel is verified by the most cursory glance at the researches of geologists. Although the range of their actual penetration has been limited to 3000 feet beneath the surface,* they present us with an analysis of the crust of our globe to a depth of ten miles. They tell us that, resting on a foundation of unstratified rocks, of igneous origin, there rise, in successive piles, a series of parallel stratified layers, deposited, from time to time, by the action of water; —they inform us that these strata, though, if left in their natural order, placed far beyond the reach of man, have been dragged up from their beds for his inspection and use, by the force of what may be termed volcanic levers;—they disclose to us the plants which flourished in luxuriant vegetation during each successive epoch of the earth's history;—and they reveal to us the animals that roamed unrestrained amid the primeval forests and marshes of these far distant periods. So minute, indeed, are the discoveries of geologists, that they can even track the footsteps of the tortoise as it crawled over the long buried sands of another age;—thus warranting the following beautiful reflections by one of the most distinguished of their number.†

"The historian, or the antiquary, may have traversed the fields of ancient or of modern battles, and may have pursued the line of march of triumphant conquerors, whose armies trampled down the most mighty kingdoms of the world. The winds and storms have utterly obliterated the ephemeral impressions of their course. Not a track

* "The deepest mine in the world (Kitzpuhl, in the Tyrol) is only 2764 feet below the surface."—*Phillips' Geology*, i. 18.

† Buckland's Br. Tr., i. 262.

remains of a single foot, or a single hoof, of all the countless millions of men and beasts whose progress spread desolation over the earth. But the reptiles that crawled upon the half finished surface of our infant planet have left memorials of their passage, enduring and indelible. No history has recorded their creation or destruction,—their very bones are found no more among the fossil relics of a former world. Centuries and thousands of years may have rolled away between the time in which these footsteps were impressed by tortoises upon the sands of their native Scotland, and the hour when they are again laid bare and exposed to our curious and admiring eyes. Yet we behold them stamped upon the rock, distinct as the track of the passing animal upon the recent snow, as if to show that thousands of years are but as nothing amidst eternity, and, as it were, in mockery of the fleeting perishable course of the mightiest potentates among mankind."

But the science of geology is not more remarkable for its magnitude and sublimity than it is for its utility. By ascertaining the relative positions of strata to each other, it directs our otherwise blindfold search into the bowels of the earth. The importance of such a guide in a country like ours, where the strata of the carboniferous group abound, cannot be over estimated; and strikingly appears from two illustrations that may here be quoted:—

"It is not many years since an attempt was made to establish a colliery at Bexhill, in Sussex. The appearance of thin seams and sheets of fossil-wood and wood-coal, with some other indications similar to what occur in the neighbourhood of the great coal-beds in the north of England, having led to the sinking of a shaft, and the erection of machinery on a scale of vast expense—not less than eighty thousand pounds are said to have been laid out on this project—which, it is almost needless to add, proved completely abortive, as every geologist would have at once declared it must, the whole assemblage of geological facts being adverse to the existence of a regular coal-bed *in* the Hastings' *sand;* while this, on which Bexhill is situated, is separated from the *coal-strata* by a series of interposed beds of such enormous thickness, as to render all idea of penetrating *through* them absurd. The history of mining operations is full of similar cases, where a very moderate acquaintance with the *usual order of nature*—to say nothing of theoretical views—would have saved many a sanguine adventurer from utter ruin."*

The next illustration is of an opposite kind:—

"Only sixteen years ago (it is in our own memory), a valuable estate in Durham was pronounced to be devoid of coal, 'because it

* Herschel's *Int. to Nat. Phil.*, sec. 36, p. 45.

was situated on the magnesian limestone;' and might have been sold under this opinion, but that a geologist of celebrity, Dr. William Smith, showed the falsity of the reasoning—reported favourably of the probability of finding good coal in abundance beneath the property—and advised the proprietor to work it. That estate is now the centre of a rich and well-explored mining tract, all situated beneath the magnesian limestone; and this result was the fruit of scientific geology, not 'practical' coal-viewing, though the professional mine-agents of the north of England are now employed in extending its benefits."*

The carboniferous group, of which mention has been made, contains ironstone, coal, and limestone;

"and the occurrence of this most useful of metals (ironstone) in immediate connexion with the fuel requisite for its reduction, and the limestone which facilitates that reduction, is an instance of arrangement so happily suited to the purposes of human industry, that it can hardly be considered as recurring unnecessarily to final causes, if we conceive that this distribution of the rude materials of the earth, was determined with a view to the convenience of its inhabitants."†

It is to the distribution here referred to, that we owe the iron manufacture of Great Britain, of which a brief account will now be given.

Any one unacquainted with minerals, would be unable to discover the slightest affinity betwixt the rough ironstone, as brought up from the mines, and the iron of commerce. The two have apparently no properties in common. And it is only after subjecting the ironstone to severe processes of manufacture, that iron can be obtained from it. These processes include, 1st, the roasting or calcining it, so as to clear it from sulphur, carbonic acid, and other deleterious substances; and, 2d, the exposing the calcined iron ore, so obtained, to intense heat in a blast furnace, charged with fuel and flux.

In early times, the furnace used for the latter purpose was of the rudest description—consisting of a low narrow conical structure, such as is still to be seen in Africa. It was called an *air-bloomery*, and was dependent, for its blast, upon the varying currents of air that played around the hill on which it was placed.

The *air-bloomery* was succeeded by the *blast-bloomery*, which, though not differing materially in construction, was blown by bellows, driven by water or wind power, whereby a more regular blast was obtained. This was its distinguishing feature; and the change formed an important improvement in the manufacture of iron.

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* Phillips' *Geology*, ii., p. 295.
† Conybeare's *Geology of England and Wales*, p. 333.

The *blast-bloomery*, in its turn, gave way to the modern *blast-furnace*, now almost universally used in the smelting of iron. The blast-furnace costs about £1500 to erect. It is a huge building of brick or stone, bulging out near the base, and gradually narrowing towards the top. Its height may be from 40 to 50 feet—its width from 12 to 15. And its capacity and strength may be estimated from the fact that the largest of these furnaces will hold 150 tons. The materials are thrown in at an opening in the top, by which the gases also escape; and the molten metal flows out from an aperture at the bottom, and is run into moulds of sand* made for the purpose of receiving it.

Cotemporaneous with the improvements in size, strength, and capacity of the modern furnace, were the improvements in its blast. A gigantic steam-engine has been substituted for water or wind, as the propelling power; and, in order to equalize the blast, this steam-engine transmits the air into a capacious cylindrical iron reservoir or regulator, (placed in the vicinity of the furnaces) from which the blast is conveyed to the fire—not as previously in irregular gusts—but in regular and continuous currents.

Another not less important change was the substitution of charred pit coal, or coke, for charred wood, as the fuel of the furnace. It was not until the end of last century that this change was completely effected. Coke had been tried in James the First's time, but had not succeeded; and the experiment was not repeated until the supply of wood had entirely failed, when the iron-masters were necessitated again to resort to coke, and finally to adopt it.

During the period of transition from the one fuel to the other, the iron manufacture was in a most languid state. A short time prior to 1740, the number and produce of the furnaces in England appears to have been very considerable; but, by that year, the number of furnaces had decreased to fifty-nine, being only three-fourths of their previous number, and their produce had fallen to 17,350 tons.

Such was the miserable state of the iron manufacture in England an hundred years ago. The following table shews its subsequent development down to the present time:—

1740,	Number of tons of pig iron produced, .	17,350
1788,	Ditto, .	61,300
1796,	Ditto, .	108,793†
1806,	Ditto, .	250,000†

* The *main* channel in the sand is called the *sow*, and the *branches* from it the litter of *pigs*—hence the name *pig-iron*.

† We are indebted for our knowledge of the Iron trade in 1796 and 1806, to the attempts made (unsuccessfully) at these periods to tax coal and iron, which caused inquiry into the subject.

1820,	Number of tons of pig iron produced,	380,000
1827,	Ditto,	654,500
1845,	Ditto, (estimated)	1,250,000*

On looking over the materials from which this Table has been obtained, it is remarkable to notice the altered distribution of the furnaces in point of locality. So long as charred wood was used as fuel, Gloucester, Sussex, and Kent, were the principal seats of the iron manufacture; but, after the substitution of coke, the manufacture was transferred to Wales, Staffordshire, Shropshire, and Yorkshire where coal abounded.

Another remark that occurs is the gradual increase in quantity of the iron produced by *each* furnace in the year and week, as shown in the subjoined note:—

		Annually.			Weekly.		
		T.	C.	Q.	T.	C.	Q.
1740,	Average produce of each furnace,	294	1	1	5	13	0
1788,	Ditto,	796	2	0	15	6	0
1796,	Ditto,	1046	0	0	20	2	0
1827,	Ditto,	2460	0	0	47	6	0
1845,	Ditto, (estimated)	5200	0	0	100	0	0

Thus, it appears that in England, during the last 100 years, the produce of iron has increased from seventeen thousand to a million and a quarter tons; and the yield of each furnace during the same period has multiplied nearly twenty fold—illustrating at once the extent of the demand, the capital expended, and the improvements introduced in the manufacture.

Turning from England to Scotland, we find the progress of the iron manufacture still more striking. The carboniferous strata of Scotland form a broad belt which traverses the centre of the island from the Firth of Forth to the shores of Ayrshire; and alongst this belt will be found the principal coal and iron works of the country. In the east of Scotland, the coal is wrought almost exclusively for family consumption; but in the west of

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* According to a statistical return made by M. Goldenberg of Berlin, the following is the annual production of iron in the different European States:—

England (including Scotland also,)	1,500,000 tons.
France,	350,000 ...
Russia,	320,000 ...
Germany,	150,000 ...
Austria,	100,000 ...
Belgium,	150,000 ...
Sweden,	80,000 ...
Other parts of Europe,	50,000 ...
Total,	2,700,000

Scotland, the iron-works absorb a great proportion of it—the fact being, that in one parish in Lanarkshire (Old Monkland) as much coal is consumed in a year at the blast-furnaces as is sufficient for the supply of the entire city of Glasgow, including its manufactories and public works.

Carron, near Falkirk, in Stirlingshire, was the first place in Scotland where iron-works were erected, and this occurred about 1767. After an interval of twenty years (1786) furnaces were put up at Clyde and Wilsontown in Lanarkshire. Within four years subsequently (1790) we find similar works established at Cleland or Omoa in the same county, also at Muirkirk in the inland part of Ayrshire, and at Devon, in Clackmannanshire. Fifteen years elapsed (1805) before the Calder and Shotts furnaces in Lanarkshire (which are next in the order of time) were built. In 1825, the Monkland Iron-Works, in the same county, were erected; in 1830, the Gartsherrie Works; and in 1834, the Dundyvan Works. Without proceeding farther with the enumeration, (which will be given in a tabular form) it may be stated, that Lanarkshire is now studded with iron-works; that Ayrshire is also being rapidly covered with them; that Renfrewshire, Stirlingshire, and Clackmannanshire have each their share; and that furnaces, on an extensive scale, are now building in Linlithgowshire and Fifeshire.

The progress of the Scottish iron trade appears from the quantity of pig-iron produced in Scotland at different periods, as shown in the following table:—

1788,	Number of tons of pig-iron produced,	7,000
1796,	Ditto,	16,086
1820,	Ditto,	20,000
1827,	Ditto,	36,000
1843,	Ditto,	280,000
1845,	Ditto, (estimated,)	400,000

The average produce of each furnace at most of the same periods may next be given:—

		Annually.			Weekly.		
		T.	C.	Q.	T.	C.	Q.
1788,	Average produce of each furnace,	875	0	0	16	16	0
1796,	Ditto,	912	0	0	17	11	0
1827,	Ditto,	2000	0	0	38	8	0
1843,	Ditto, (estimated,)	5200	0	0	100	0	0
1845,	Ditto, (do.)						

And, in order to complete the general view of the subject, we

subjoin a state, showing the number and the distribution of furnaces in Scotland at the present time :—

FURNACES IN SCOTLAND (*October* 1845.)

	In blast.	Out of blast.	Total.
I. IN LANARKSHIRE—			
(1) Carnbroe, . .	5	1	6
(2) Calder, . .	5	3	8
(3) Castlehill, . .	2	0	2
(4) Coltness, . .	4	0	4
(5) Clyde, . .	5	1	6
(6) Dundyvan, . .	9	0	9
(7) Garscube, . .	1	1	2
(8) Gartsherrie, . .	15	1	16
(9) Govan, . .	5	0	5
(10) Langloan, . .	4	0	4
(11) Omoa, . .	2	1	3
(12) Monkland and Gartness,	7	0	7
(13) Shotts, . .	3	0	3
(14) Summerlee, . .	4	1	5
(15) Wilsontown, . .	0	2	2
II. IN AYRSHIRE—			
(16) Blair, . .	3	0	3
(17) Cessnock, . .	0	2	2
(18) Glengarnock, . .	4	1	5
(19) Muirkirk, . .	2	2	4
III. IN RENFREWSHIRE—			
(20) Househill, . .	0	2	2
IV. IN STIRLINGSHIRE—			
(21) Carron, . .	3	2	5
V. IN CLACKMANNANSHIRE—			
(22) Devon, . .	2	1	3
	85	21*	106

The number of Scottish furnaces in blast, thus amounts to eighty-five; and, if to these are added about twenty new furnaces building, or about to be built, in Ayrshire, Linlithgowshire, and Fifeshire, the total number of furnaces at work in Scotland will, ere long, be 105, each yielding on an average 100 tons of metal per week, and producing together, in the year, upwards of 500,000 tons of pig-iron, being not much less than half the present total produce of England.

* Those out of blast are either undergoing repair, or have been stopped from want of ironstone or coal; and several of them will probably be resumed.

What a contrast is this to the former state of the iron trade in Scotland. In the forty years that elapsed betwixt 1788 and 1827, the quantity of iron made increased only from 7000 to 36,000 tons, while, during the period from 1827 to 1845—not more than eighteen years—the quantity has risen to 400,000 tons, and will soon reach half a million.

No doubt, much of the rapid improvement in the iron trade throughout the country, is justly to be ascribed to the numerous purposes to which iron is now applied as compared with former periods. When the Carron Works were established, and for many years after, the grates and other household articles for which these works became celebrated, were almost the only iron objects with which our eyes were familiar. But now, wherever we turn, we are met by iron. If we walk into the country, we see the clumsy wooden gates that long asserted their right to protect the farmer's enclosures, supplanted by iron. Pass from the country to the city, and we observe our churches, shops, and buildings all supported on pillars of iron, and our areas enclosed with iron. Travel by railroad from city to city, and we find ourselves propelled by iron, and flying upon iron. Cross along a bridge from one side of a river to another, and, in many instances, we observe the bridge constructed of and suspended by iron. Leave the land journey, and enter the steam-boat, and still we are incased in sheets of iron. In short, iron is every where on the aggressive; and we shall not be surprised to hear by and bye of iron floors, iron beds, and iron tables, as well as of the iron houses which are occasionally to be seen on their way to other climates.

This universal demand for iron, accounts for the rapid progress of the iron trade; and the improvements made from time to time in the manufacture have hitherto enabled the iron-master to meet the demand. We have already mentioned some of these improvements, but have purposely reserved the greatest of them all for a separate notice. We refer to the discovery, now well known by the name of the HOT BLAST, which was patented in 1828 by James Beaumont Neilson, manager of the Glasgow Gas Works.

His invention consists simply in heating the blast before it enters the furnace; and the apparatus to be employed for this purpose is equally simple, being a heating chamber, or vessel of any construction, placed betwixt the blowing cylinder and the furnace, to receive and heat the air in its passage from the former to the latter.

When this discovery was first announced, it was ridiculed and laughed at as the visionary idea of a person unacquainted with the subject. Practical men had long been universally agreed that the *colder* the blast the better the iron; and their

opinion appeared to be confirmed by the circumstance that blast furnaces wrought better and produced more iron in winter than in summer. Acting upon these views, the efforts of iron-masters had always been directed to the *cooling* of the blast; and various were the expedients devised for that purpose. There were instances even of the regulator being painted white, as the "coolest colour;" of the air being passed over water, and of the air-pipes being surrounded with ice; all shewing the exertions made in order to keep the blast cold. Nor was this notion confined to practical men. The scientific world was equally unenlightened on the subject; and it was stated in the London Cyclopædia, and Rees' Cyclopædia, that it was an advantage to use the blast as cold as possible.

It was against inveterate prejudices like these that the hot-blast had to contend; but, in course of time, all prejudices gave way, and Mr. Neilson's invention came at length to be acknowledged as one of the most important ever discovered. Professor Forbes of Edinburgh states, that it is now generally used, not only in Scotland and England, but also in France, Belgium, Switzerland, Russia, Prussia, Silesia, Hesse, and America. Professor Gregory of Aberdeen, characterizes it as the "greatest improvement with which I am acquainted." Mr. Mushet (whose name is distinguished in connexion with blackband ironstone) describes it "as a wonderful discovery," and as one of the most "novel and beautiful improvements that I have known in my time." Mr. Houldsworth, a Scottish iron-master, says in regard to it, that "it has been the making of the iron trade in Scotland." Mr. Jessop, an extensive English iron-master, expresses his opinion, that it is "as great an advantage in the iron trade as Arkwright's machinery was in the cotton-spinning trade." And a writer in the Encylopædia Britannica states, that it has "effected an entire revolution in those branches of industry and of commerce connected with the manufacture and application of the most valuable of metals."

After testimonials like these, the reader will naturally expect the utility of the invention to be great and palpable; and he will not be disappointed. The saving in every ton of iron made by the hot-blast as compared with the cold-blast is,

	Quantity Saved. Tons.	Cwt.	Price per Ton.	Money Saved.		
(1.) Coal, . . .	5	0	at 5/6.	£1	7	6
(2.) Limestone, . .	0	10	at 4/0.	0	2	0
(3.) Wages (saved by not coking the coal, &c.)				0	3	0
Total, .	5	10		£1	12	6

And, at the same time, the furnace does double the work which it did with the cold-blast, whereby half the capital formerly required for the erection of furnaces is sufficient. Against this last benefit, however, has to be placed the expense of the apparatus for heating the air; and the one counterbalances the other, so that neither requires to be taken into the account.

The savings by the hot-blast arise, 1st, from it being unnecessary now to coke the coal used in the manufacture; 2d, from less raw coal being required as fuel; and, 3d, from less limestone being needed as flux.

These savings amount, as has been seen, to five tons of coal, and half a ton of limestone (in materials); and (in money) to £1, 12s. 6d., on each ton of iron produced by hot-blast.

And as, in Scotland, every furnace (with the exception of one at Carron) now uses the hot-blast, the saving on our present produce of 400,000 tons of pig-iron, is 2,000,000 of tons of coals per annum, 200,000 tons of limestone per annum, and the sum of £650,000 sterling per annum. In England the saving will be still greater; but as we have no accurate information as to the precise number of furnaces there at present using hot-blast, we cannot enter into details. Nor is it necessary to do so; for facts enough have been given to shew the immense importance of the invention in question, and the debt which the iron trade and the country owe to Mr. Neilson, for thus economizing our most valuable resources.

But, brilliant as is the result of Mr. Neilson's discovery, he had many difficulties to contend with; and it will not be uninteresting to endeavour to trace the history of his connexion with hot-blast.

In the New Statistical Account of Scotland (article, *Lanarkshire*), we find the following notice of Mr. Neilson's first introduction to the subject, which is the more valuable, as it appears to be drawn up from notes furnished by himself:—

"In 1824, an iron-maker asked Mr. Neilson if he thought it possible to purify the air blown into blast-furnaces, in a manner similar to that in which carburetted hydrogen gas is purified; and from this conversation, Mr. Neilson perceived that he imagined the presence of sulphur in the air to be the cause of blast-furnaces working irregularly, and making bad iron in the summer months. Subsequently to this conversation, which had in some measure directed his thoughts to the subject of blast-furnaces, he received information that one of the Muirkirk iron-furnaces, situated at a considerable distance from the engines, did not work so well as the others; which led him to conjecture that the friction of the air, in passing along the pipe, prevented an equal volume of the air getting to the distant furnace, with that which reached to the one situated close by the engine; and he at once

came to the conclusion that, by heating the air at the distant furnace, he should increase its volume in the ratio of the known law according to which air and gases expand. Thus, if 1000 cubic feet, say at 50° of Fahrenheit, were pressed by the engine in a given time, and heated to 600° of Fahrenhe it, it wouldthen be increased in volume to 21,044; and so on for every thousand feet that would be blown into the furnace. In prosecuting the experiments which this idea suggested, circumstances, however, convinced him, that heating the air introduced for supporting combustion into air-furnaces, would materially increase its efficacy in this respect; and, with the view of putting his suspicions on this point to the test, he instituted the following experiments:—To the nozzle of a pair of common smith's bellows he attached a cast-iron vessel, heated from beneath in the manner of a retort for generating gas; and to this vessel the blow-pipe, by which the forge or furnace was blown, was also attached. The air from the bellows having thus to pass through the heated vessel above mentioned, was consequently heated to a high temperature before it entered the forge fire, and the result produced in increasing the intensity of the heat in the furnace was far beyond his expectation; whilst it made apparent the fallacy of the generally received theory, that the coldness of the air of the atmosphere in the winter months was the cause of the best iron being then produced. But in overthrowing the old theory, he had also established new principles and facts in the process of iron-making; and by the advice and assistance of his friends, he applied for and obtained a patent, as the reward of his discovery and improvement."

The friends to whose advice and assistance Mr. Neilson resorted, were Mr. Charles Macintosh of Crossbasket, Mr. Colin Dunlop of Clyde Iron-works, and Mr. John Wilson of Dundyvan Iron-works; and as capital was required to perfect the invention, and combined energy and influence were needed to introduce into practice what was then reckoned a useless innovation, Mr. Neilson saw it for his interest to communicate to these gentlemen a share in the patent.

"To Mr. Dunlop of Clyde Iron Works," says the writer in the Encylopædia Britannica, "Mr. Neilson had to give up three-tenths of his patent rights; to Mr. Macintosh three-tenths; and one-tenth to Mr. Wilson of Dundyvan, retaining to himself only three-tenths of this valuable monopoly. But the transfer was judicious—it was necessary. Mr. Macintosh is distinguished as a man of much practical science; Mr. Dunlop was one of the most sagacious ironmasters of his time; and Mr. Wilson was a man of tried practical talent. The co-operation of these gentlemen was essential to the speedy and successful trial of the novel though simple process."

The patent was taken out on 1st October 1828, and endured for the ordinary term of fourteen years. Its title, which was written by Lord Brougham, describes it to be an "invention for the improved application of air to produce heat in fires, forges,

and furnaces, where bellows or otherb lowing apparatus are required." Within four months after the date of the patent, a specification was, as usual, lodged in Chancery, explaining the nature of the invention. The specification in this case, which was drawn up by the late Serjeant Bompas, is as remarkable for its perspicuity and brevity as the generality of specifications are for their obtuseness and length. It is in these terms :—

The patentee first describes the essential part of his invention in the following words :—

"(1.) A blast or current of air must be produced by bellows or other blowing apparatus now in use in the ordinary way, to which mode of producing the blast or current of air this patent is not intended to extend.

"(2.) The blast or current of air so produced is to be *passed* from the bellows or blowing apparatus into an *air-vessel or receptacle*, made sufficiently strong to endure the blast, and *through* and from *that vessel or receptacle* by means of a tube, pipe, or aperture *into the fire, forge, or furnace.*" And,

"(3.) The *air-vessel or receptacle* must be *air tight or nearly so*, except the apertures for the admission and emission of the air; and at the commencement, and during the continuance of the blast, it must be kept *artificially heated in a considerable temperature.*"

Having thus explained his invention, the patentee next proceeds to add such directions, in detail, as he had found necessary or useful in carrying it into effect.

"(1.) It is better," says he, "that the *temperature* be kept to a red heat, or nearly so; but so high a temperature is not absolutely necessary to produce a beneficial effect.

"(2.) The air-vessel, or receptacle, may be conveniently made of *iron;* but as the effect does not depend upon the nature of the material, other metals or convenient materials may be used.

"(3.) The *size* of the air-vessel must depend upon the blast, and on the heat necessary to be produced. For an ordinary smith's fire, or forge, an air-vessel, or receptacle, capable of containing 1200 cubic inches, will be of proper dimensions; and for a cupola of the usual size for cast-iron founders, an air-vessel capable of containing 10,000 cubic inches will be of a proper size. For fires, forges, or furnaces upon a greater scale, such as blast-furnaces for smelting iron, and large cast-iron founders' cupolas, air-vessels of proportionally encreased dimensions and numbers will be required.

"(4.) The *form or shape* of the vessel or receptacle is immaterial to the effect, and may be adapted to the local circumstances or situation.

"(5.) The *air-vessel* may generally be conveniently *heated* by a fire distinct from the fire to be affected by the blast or current of air; and generally it will be better that the air-vessels, and the fire by which it is heated, should be enclosed in brick-work or masonry, through which the pipes, or tubes connected with the air-vessel, should pass."

And the patentee concludes his specification by reverting to

the substantial part of his invention, and inserts this general salvo—

"The *manner* of applying the heat to the air-vessel is, however, immaterial to the effect, if it be kept at a proper temperature." In other words, "get my air heated. I don't care how you do it; the manner is nothing to me; it is sufficient for my purpose to have heated air blown into the furnace."

Having now obtained their patent and lodged their specification, Mr. Neilson and his partners proceeded to have the invention brought into use at the blast-furnaces of Great Britain. The first thing to be done was to determine the charge which they were to make for it. They appear to have been all agreed that, following the example of Watt,* it should be a proportion of the saving effected by employing the patent. They seem, however, to have differed for a time as to what that proportion ought to be; but ultimately concurred in fixing it at the low sum of one shilling for each ton of iron produced by the hot-blast. No doubt this moderate charge was made, in order to ensure the introduction of the patent into speedy use, as well as to prevent its infringement. How far the latter object was attained, will shortly be seen. The former object was speedily realized both in England and Scotland.

The first trials were made in Scotland at the blast-furnaces of Clyde and Calder. Gradually it was extended from time to time to other parts of Scotland, and to the mining districts of England. And, ultimately, when the patent expired on 1st October 1842, it was to be found at every furnace in Scotland, with one exception; at one-half of the furnaces in England; and at many furnaces on the continents of Europe and America.

During this period, considerable improvements were made in the shape of the air-heating vessels. At first these vessels were in the form of a round, or a square, or a cylindrical box—then they became more elongated—next partitions were placed in them,—and latterly the form adopted has been a congeries of tubes, whereby the greatest extent of heating surface is obtained for the thorough heating of the air.

These improvements in the heating vessels raised the temperature of the air introduced into the furnace from 240° to 600°, being the temperature of melting lead.

And this increased heat caused the introduction of another beautiful improvement in order to protect the nozzle of the air-

* "The object and result of Watt's invention was (by condensing in a separate vessel) the saving of fuel; and the remuneration he asked and obtained, was a per centage of this saving. In like manner, the object and effect of Neilson's invention was the saving of fuel, and that principally in the manufacture of iron," &c.

pipe as it entered the furnace. The improvement referred to consisted in introducing, within the sides of the iron twyre through which the nozzle passes, a spiral pipe for a stream of water constantly to play. The twyre was thus kept comparatively cool, and formed an effectual protection to the nozzle of the air-pipe.*

All these improvements tended to illustrate more strikingly the worth of Mr. Neilson's invention, and to bring it more rapidly into use. But, notwithstanding its great advantage to the iron-masters, and the moderate remuneration asked from them in return, the patent did not escape the usual fate of valuable patents. It was soon the subject of litigation. The first litigation occurred in 1832. A party in Scotland who had obtained a license to use the patent at the stipulated price, refused, in that year, to pay the license duty; and contended, in the usual style of objectors to patents, that Mr. Neilson was not the first and true inventor—that the invention was not new—that it was not useful—that it was a patent for a mere principle—that the specification was unintelligible and inexplicit—and, finally, that the apparatus used by the objector did not fall under the patent.

But this first litigation did not last beyond a year. In 1833, it was settled by the party objecting giving way, paying for the past, and taking a license of new, which the patentees granted at the same rate as previously.

From 1833 to 1839, Mr. Neilson and his friends remained in the undisputed possession of the patent, and drew, from year to year, the profits of the invention, which, by 1839, appear to have amounted to many thousand pounds per annum.

But in 1839 the patent was again disturbed. During the interval the embers of the old litigation seem never to have been wholly extinguished; and they now broke out of new with greater force than before. The same parties appeared as objectors a second time; but, on this occasion, they were supported by several of the other Scotch iron-masters, who entered into a combination to defeat the patent. The objects of this powerful confederacy were embodied in a formal deed, executed in January 1840, which, from its novelty, is worthy of being preserved. It was in these formidable terms:—

"The subscribers hereto named and designed in the testing clause hereof, being all interested in the iron trade, and in opposing the enforcement of certain privileges alleged to have been conferred on James Beaumont Neilson, engineer in Glasgow, by letters patent, dated the

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* Mr. John Condie, sometime manager at the Blair Iron Works, claims the merit both of introducing the improved tubular air-vessels, and the water twyre.

1st day of October 1828, and to be now vested in him and Charles Macintosh of Campsie, and John Wilson of Dundyvan, and the Trustees of the late Colin Dunlop of Tolcross, and of the claims founded by those parties on certain licenses or agreements between them and various of the subscribers, proceeding upon the said letters-patent, do hereby agree and bind themselves to institute, defend, carry on, and follow out to a conclusion, such actions, and generally to adopt such proceedings, judicial and extrajudicial, as Duncan M'Neill and Robert Whigham, Esquires, advocates, or the survivor of them, shall advise to be expedient and proper for setting aside the said letters-patent, and for resisting the enforcement of the claims founded by the said James Beaumont Neilson and others thereon, and on the said licenses or agreements, and for obtaining repetition of the sums paid by the subscribers in consequence thereof, and generally for challenging, opposing, and obtaining redress against the claims set up by the said James Beaumont Neilson and others, and that in the name of the subscribers, or any of them, or of any other parties as may be advised by the said Duncan M'Neill and Robert Whigham, or the survivor of them, and to pay the expense of all such proceedings, and to relieve any cautioners who may become bound; or, if required to become cautioners themselves, for preventing or removing any interdict which may be applied for by the said James Beaumont Neilson and others, against any of the subscribers, and, generally, to bear the whole consequences of opposing and resisting the claims of the said James Beaumont Neilson and others, all in proportion to the quantity of pig-iron made at the iron works of the subscribing parties respectively, during the continuance of the said proceedings; and they bind themselves severally to make no payments to, and to enter into no compromise or arrangement of any kind, with the said James Beaumont Neilson and others, excepting such as shall be approved of in writing, by at least so many of the subscribers as shall be the proprietors of a majority in number of the furnaces in blast at the time belonging to the whole body of the subscribers, and as shall be made upon terms common to all the subscribers; but the minority shall be obliged to enter into any arrangement made by such majority, on terms common to all; and it is hereby agreed that each of the subscribers may employ such agent in Edinburgh as he shall think fit, but that the said Duncan M'Neill and Robert Whigham, with such other counsel as they, or the majority of the said agents, may consider necessary, shall be the counsel employed in conducting the said proceedings; and in the event of any difference arising as to the meaning or effect of this agreement, or as to the apportionment of the liabilities hereby undertaken, the same is hereby referred to the said Duncan M'Neill and Robert Whigham, or the survivor of them, who shall have power to take such assistance in determining the same as they shall think fit, and whose decision shall be final."*

* When thus recording the names of the very able counsel selected by Mr. Neilson's opponents, it is right also to mention that the management of Mr. Neil-

The litigation betwixt the parties, which was thus so boldly recommenced, continued from 1839 to 1844; and the law charges expended on each side could not have been less than £20,000. There appear to have been about twenty separate Scottish actions going on at the same time, in all the varied forms of interdicts, declarators, and damages. Every point was contested to the utmost. Twice were Neilson's claims submitted to and sustained by a jury; and twice were appeals taken to the House of Lords. The first jury trial occupied six days, and thirty-eight witnesses were examined. The second trial lasted ten days, and one hundred and two witnesses were examined. But, at length, the objectors finally abandoned farther litigation; and paid, in different proportions, to Mr. Neilson and his friends, a very large amount, as a compromise and settlement of the litigations,—being, in some cases fifteen times, in others ten times, and in others seven and a half times, the sums which they would have had to pay had they not disputed the patent. In other words, in place of paying only one shilling per ton on the iron produced, some had to pay 7s. 6d. per ton, some 10s. per ton, and some 15s. per ton. The litigation also extended to England, where there were several actions, one jury trial, and one appeal to the House of Lords,—in all of which Mr. Neilson was successful. But these were likewise settled about the same time, although nothing more than the license-duty was recovered.

The hot-blast patent has thus passed through an ordeal the most severe that any patent ever encountered. But the result has been to establish the novelty and merit of the discovery, and the claims of Mr. Neilson as its sole inventor. Like Watt,* he had to part with two-thirds of the profits, in order to secure the capital and influence necessary to bring his invention into use. Like Arkwright,† he had to encounter three trials at law, for the protection of his patent. But (unlike Cartwright, whose invention was only beginning to be introduced in the last year of his patent,) Neilson was successful in drawing a large pecuniary return from his patent for at least eight years of its duration. What the precise amount of that return may have been, the pro-

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son's case was intrusted to Mr. Rutherfurd, M.P. for Leith, and Lord Rector of the University of Glasgow, whose eminent talent shone conspicuously at every stage of the litigation. In fact, he seems never to have lost a single point.

* Dr. Roebuck, the founder of the Carron Iron Works, and the lessee of the extensive coal-works at Kinneal, was the first party to whom Watt made over two-thirds of his patent; but the Doctor became involved in difficulties, and his share was transferred to Mr. Boulton.

† Arkwright was unsuccessful at his first trial—gained his second—and lost his third.

ceedings in the litigations do not show. But, looking to the quantity of iron produced during the period of the patent by the hot-blast process, and to the sums paid at the close of the litigations, the profits of the proprietors cannot have been less than £300,000, of which Neilson's share would be £90,000.

Neilson was satisfied with this reward, and did not apply for a renewal of his patent. He has now, we understand, retired from active business, though by no means an old man; and is enjoying, in the seclusion of the Island of Bute, the quietness of a country life. His name is identified with the greatest improvement that has yet been discovered in one of our staple manufactures; and will pass down to posterity, as not unfit to be associated, in point of usefulness to his country, with the names of Watt, and Arkwright, and Cartwright. Were any tribute to be paid him, either now or hereafter, the most appropriate device that could be placed upon it would be to present him as standing betwixt the blowing cylinder and the blast-furnace, intercepting and heating the air in its passage from the one to the other. Such would be a vivid picture of Neilson's invention.*

The impetus given to the iron manufacture by the introduction of the hot-blast has greatly enriched proprietors and manufacturers of minerals, as must be apparent from the tabular view we furnished of the rapid progress of the trade during the last eighteen years. Proprietors, whose lands previously yielded only a few hundred pounds a year, are receiving thousands of pounds by the opening up of their minerals;† and the profits of the manu-

* We have already given the saving to the *producer* by Neilson's invention; and we ought also to have mentioned the saving to the *consumer*. The following moderate estimate has been made of this last saving. It refers to a previous statement on the subject, which, however, it is unnecessary to quote:—"There is one feature in my former statement which might have been more forcibly brought out, as marking the great benefit which the country in general has derived from the application of heated air in the smelting of iron. It would be observed, that I gave the January prices (as being usually the lowest) for the last twenty-five years. The average rate for the first ten years, 1821 to 1830 inclusive, when *cold-blast* was in operation, is £7, 2s. 6d. per ton, while the average of the last ten years, 1835 to 1844 inclusive, under *hot-blast* is £3, 17s. 6d., giving a benefit to the consumers of Scotch pig-iron of no less than £3, 5s. per ton. Supposing the make to have been equal to 100,000 tons per annum, for the last ten years—and I am persuaded this is not far from the mark—the saving of cost to the country amounts to £3,250,000, on the article of iron made in this quarter, besides the impetus which it has given to every branch of trade where iron is consumed."—*Correspondent of Mining Journal, 8th February* 1845.

† "The great iron works of Gartsherrie, Summerlee, Calder, Dundyvan, and Chapel Hall, receive a great quantity of ironstone from Rochsilloch, the property of Sir William Alexander. The black band here yields from 30 to 40 per cent. of iron. The output at Rochsilloch alone is 4,500 tons per month, and the annual income to the proprietor is about £12,600 per annum, from a property which, if only let for tillage, would only yield a few hundreds per annum."—*New Stat. Account of Scotland—Lanarkshire.*

facturers may be judged of from the fact, that the nett profits of one firm amounted, for the seven years from 31st May 1832 to 31st May 1839, to £214,800, 8s., or at the rate of £30,000 a year; and, for the year from 31st May 1839 to 31st May 1840, it had increased to £54,855, 1s. 5d.* Their profits since, and particularly at present, must be enormous.

The demand for iron is still on the increase, and appears to have reached the point when it has exceeded the present means of its supply. Owing to the immense number of railways in progress and in agitation, it is anticipated that about two millions of tons per annum will be required to be made during this and the next two years. Such a quantity cannot be calculated on. The supply will probably fall short of it by a quarter of a million; and the effect will be a great increase in the price of iron. But if this increase shall be the means of checking the universal and reckless speculation in railways that prevails amongst all classes—from the merchant of highest standing to the waiter in our country inn—none need regret although prices are doubled or tripled for a time. It will be the most natural check that can be applied, and much more effectual than any legislative measures on the subject.

But, amid the blazing of the iron-furnaces, the improvements that have been introduced into the manufacture, the profits that are derived from it in all quarters, and the whirl of speculation in which we are involved, we are apt to overlook the condition of the colliers and miners, upon whose labour all is dependent.

"These subterraneous labourers pursue, with incessant toil, their invaluable occupation. A shaft is sunk, wide excavations are opened up, and tier above tier are formed at various depths below the surface of the earth; and sometimes below the bed of a river, or of the ocean itself, a succession of extensive streets are seen to penetrate the bowels of the earth: so that, in a tract of country which for ages may have been regarded as an unproductive waste, numerous villages, with their busy throng of inhabitants, find an existence which would never have been theirs but for the fruitful source of wealth that is yielded by the coal (and iron) mines. And thus it happens in many parts of this industrious and enterprizing country, that a dense population are making the bosom of the earth to resound with the pickaxe below, while the surface is opened by the plough above, or, it may be, is furrowed by the rapid keels which bear abroad the commerce of Great Britain."†

In Scotland, the mining population here referred to has long been in the most degraded condition. Prior to 1775 the colliers were, by the common law of Scotland, in a state of slavery.

* Evidence in Baird's Trial.

† Dr. Colquhoun.

They, and their wives and children, were the property of their master, and were transferrable with the coal-work in the same way as the slaves on a West India estate were—(till the Abolition Act was passed,)—transferrable on a sale of the estate. This state of things was changed in 1775, by an Act which declared them "free," and found them entitled to "enjoy the same privileges, rights and immunities, with the rest of his Majesty's subjects." But the spirit of the Act was destroyed by its restrictions and regulations; and, in 1799, another statute had to be passed, enacting that "all the colliers in Scotland shall be free from their servitude."

This legal manumission, however desirable as a preliminary, could not produce social reformation; and, as no ameliorating measures followed to elevate the moral and educational position of the miner, he remained substantially the same man when free that he was when a slave; and he still continues, in a great measure, unchanged. The mining population of Coatbridge, the focus of the Lanarkshire works, is thus described by Mr. Tancred in his Report to the Childrens' Employment Commissioners, dated 31st July 1841:—

"At Coatbridge, where a large portion of this population has been located within the last ten years, no church or clergyman has been supplied them till very recently, when a church was erected, chiefly at the expense of one out of the numerous employers of labour in the district. There is also a Relief Church, provided also by voluntary contributions. These efforts come, of course—as must always be the case so long as things of this importance are left, as now, to accident and chance—too late. In the meanwhile, a population has been growing up, immersed more deeply than any I have met with in the most disgusting habits of debauchery. I feel that my powers of description are wholly inadequate to convey the feeling inspired by a visit to these localities. The able report of Mr. Tremenheere upon the state of the districts about Newport, in South Wales, in which the Chartist riots broke out, would apply not inaptly to the state of things about Coatbridge and Airdrie. Every thing that meets the eye or ear tells of slavish labour united to brutal intemperance. At night, ascending to the hill on which the Established Church stands, the groups of blast-furnaces on all sides might be imagined to be blazing volcanoes, at most of which the smelting is continued Sundays and week days, by day and night, without intermission. By day a perpetual steam arises from the whole length of the canal, where it receives the waste water from the blast engines on both sides of it; and railroads, traversed by long trains of waggons drawn by locomotive engines, intersect the country in all directions, and are the cause of frequent accidents, into which, by the law of Scotland, no inquiry is made."

Since 1841, in consequence of the deplorable picture which the Commissioners' Report disclosed, a great legislative improve-

ment has been introduced, whereby all females are prohibited from working in coal or ironstone mines; thus securing to the rising generation the *opportunity* of maternal care which they did not previously enjoy. And, owing to the exertions of Mr. Tremenheere, the Inspector appointed under the Act, its provisions are in course of being vigorously enforced.

But no mere legislative enactments will cure the social evils that exist in the mining districts. The true remedy is to be found in a proper relation being established betwixt the "employer" and the "employed;"* and to this object Mr. Tremenheere, who is evidently a most superior man, has been directing his energies.

The work is a difficult one to accomplish, owing to the miner's entire want of training. What may be the state of the next generation, after the recent legislative measures have had time to operate, no one can tell. But the miner of the existing generation is a sad instance of the effects of neglect. Scarcely was he born before he was removed from the charge of his mother (who returned to her work in the collieries,) and intrusted to the care of a stranger. There was no room, therefore, for the exercise of the parental affections. At the age of five, six, or seven, the child was sent into the pits, and employed as a "trapper" in the dull and monotonous duty of opening and shutting the doors which regulate the ventilation of the mines. When he was a few years older, he was advanced to the post of dragging, by a chain attached to his leg, or by pushing before him, the trucks of coal from the place where it is wrought to the bottom of the shaft. By fourteen, he was a "half man," employed in assisting the working colliers; and at the age of seventeen or eighteen, he was invested with the full status of a collier or miner. By the age of forty-five, he is an old man, scarcely fit for his laborious occupation.

Add to all this that his labour is underground—that he begins his work at four in the morning—has no regular hours for meals—no comfortable home—no correct notion of personal cleanliness†

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* An admirable little tract, with this title, written in a calm and kindly spirit, was published, some time since, by the Messrs. Chambers; but such is the ignorance and prejudice of the miners, that they will not read it with temper, and they universally denounce its simple truths.

† "By the strange infatuation of a deep-rooted and nearly universal prejudice, the collier believes that it weakens him to wash his back. The consequence is, that not one collier in 500 *ever* washes his whole person, unless he may chance to have opportunities of bathing in summer, to which, by the bye, he does not attribute any ill effects, though he fears injury from his using water to his back in the comm ⁻ n process of washing. The collier, as a general rule, when he comes home from his day's labour, as black from head to foot as the coal he has been working, sits down on a stool before the fire and washes his face, neck, and breast, his arms and his shoulders, and his legs up to his knees—often not so far; he washes his head on Saturdays. The whole of the rest of his person remains untouched by water. I found, during casual visits to their cottages from time to time, after the hours of

—and is liable every day to be carried off by a thousand accidents *—and who will wonder that he is destitute of education, of reflection, and of provident habits,—ignorant of the relation betwixt wages and capital—despotic in his control over the free labour of his fellow-workmen—easily duped into combinations and strikes,—and the creature of sensuality and intoxication!

It makes one shudder to contemplate a manufacturing population composed of such individuals. Their underground occupation removes them from all association and sympathy with other classes of labourers. They constitute a separate class of their own; and the frequent disturbances in the mining districts show, that unless great improvements take place, we have a volcano in our social system, which, did its full force break out,

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labour, some hundreds of men in the act of washing; the backs of every one of them were quite black, and every one gave the same reason, in the same words, for not washing his back, namely, 'that it would weaken it.'"—TREMENHEERE'S *Report*, 1844.

* The accidents in the mines of Great Britain occasion about 2500 deaths in a year. At every explosion from 1743 to 1845, there have been, on an average, 13 lives lost. The *Mining Journal* keeps a weekly record of these accidents; and the following is its catalogue for a week, taken at random, in February last:—

"MINE ACCIDENTS.

"*Bent Grange, Oldham.*—H. Stochley was killed from injuries of the spine, caused by an unnecessarily rapid winding of a carriage, which was pulled over him. At the same colliery, (belonging to T. Butterworth, Esq.,) J. Spurr got into so narrow a passage, that a waggon in passing, crushed him to death.

"*Ilkeston, Derbyshire.*—P. Bostock was killed by part of the workings falling on him in a colliery in which he was employed.

"*Coltness Iron Company, near Shotts.*—As three men and a boy were descending one of this Company's pits, the belt chain caught hold of the bucket, and upset it, precipitating them all to the bottom. The men were killed, but the boy was miraculously saved.

"*Longton, Staffordshire.*—As W. Hannaby (eleven years of age) was pushing a corfe to the mouth of the pit, to be lowered into the mine, it got beyond his control, when both fell down the shaft, ninety yards deep. The boy was killed.

"*Balleswodden Mine.*—A large 'scale' of ground fell on and seriously injured T. Leggo, while at work.

"*Wyndham Pit, Cleator Moor.*—D. Lash and J. Wilkinson have died from the effects of injuries received by an explosion at this pit.

"*Plean Colliery, Stirling.*—As D. Forsyth and his son were undermining a large piece of coal, it suddenly parted from the roof, and falling upon the son, killed him in the presence of his father.

"*Woodhead Lead Mines.*—A poor boy, named Murray, fell down a sump, thirty-six feet deep, and was seriously injured.

"*Thistleyfield, Butterworth, Lancashire.*—Two young men were killed while employed in a coal-pit.

"*Firgrove Colliery, Middleton.*—As three brothers were descending Messrs. Knowles's pit, Milnmo, in consequence of the head stocks giving way, they came in contact with an ascending tub, and were thrown out, two being killed.

"*Margam Colliery, near Pyle.*—An explosion of fire-damp took place here yesterday week, but the men, with one exception, fortunately escaped, by throwing themselves upon their faces into the water running through the works. J. Jones, being more exposed than the rest, was much burned by the ignited damp."

could be restrained neither by reason nor law, and might materially disturb the framework of society.

These improvements the Legislature are wisely encouraging. But it is with the capitalists—the employers—that the responsibility must rest of carrying them fully out. Were the capitalists joint-stock companies, we would expect to meet with difficulties in doing this; but it should be different with private individuals, who can devise and carry out their plans unfettered; and almost the whole mining works of the country are in the hands of private individuals.

The improvements necessary will be seen from a perusal of the Commissioners' Reports, and the evidence appended. We have no space at present to analyze these valuable documents; but the following occur to our recollection as some of the most useful suggestions:—

(1.) The masters should abolish the truck system, and give fair effect to the Act which prohibits it. It is well known that in few instances have they done so; and although the reasons given for its continuance are plausible (such as the distance of works from markets, &c.) it is a sufficient answer that the Legislature, after due investigation, considered the system bad as a whole, and passed a law prohibiting it. Any evasion of that statute leads the miners to suppose that, while laws can be enforced to the letter where he is concerned, it is otherwise with the rich. Such an idea will be removed from his mind by the master carrying out the provisions of the Truck Act.

(2). The iron furnace should not be blown upon Sundays, except in so far as absolutely necessary. This has been successfully tried at many works, and the change has been beneficial in the district around.

(3). The schools and churches which many of the iron-masters are establishing in their districts, should have teachers and clergymen not merely of high attainments, but of enthusiastic dispositions, whose ardour will lead them to leave no effort untried for the amelioration and improvement of the population;—and the masters or their managers should personally take an interest in the schools, by visiting them statedly, and in other ways.

(4). The construction, ventilation, and cleanliness of the dwellings of the miners is the next important point; and its beneficial effect will best be seen by reference to the state of matters, in that respect, at a colliery in Ayrshire.

"The colliery in question is that of the Duke of Portland, about a mile and a-half from Kilmarnock, Ayrshire. It has been in existence many years, and has, for the last forty years, been under one management—that of Mr. Guthrie of Mount, his Grace's agent. It

employs about 120 families of colliers. These, instead of being crowded together in long rows of cottages, of fifty or sixty each (where the contamination of bad example quickly spreads to the whole, and the difficulties of the well disposed in keeping their homes neat, and their children clean and well behaved, are increased), are separated in groups of five or six houses at a distance of three or four hundred yards from each other, each with its plot of garden-ground. No dogs or poultry are allowed to be kept, and other arrangements are made for comfort, propriety, and cleanliness, around the houses. Where so few are collected together, there is obviously a better chance of order and harmony, and a mutual regard for each other's convenience and comfort. Things offensive to the feelings and habits of the best among them are more easily kept down, and what is reasonable and judicious is more readily established by the force of a sound public opinion. Substantial comfort, order and cleanliness, prevailed within and around these cottages."*

Such neatness and tidiness in the cottages of the workmen will aid also in promoting habits of personal cleanliness, which should be encouraged by providing abundant supplies of water conveniently situated.

(5.) Another great point would be, to extend the contracts with the workmen, and the period of occupation of their dwellings, beyond a fortnight or a month, which is the general period, to six months or a twelvemonth. At present, the workman is liable to be turned adrift, without work or house, upon fourteen days' or a month's warning. He is, therefore, constantly unsettled. But, by engaging him for a longer period, his habits would become more settled, and he would be more open to suggestions for his improvement.

(6.) Every thing should be done to prevent accidents in mines, and to take away the notion from the workman that nobody cares for him—a notion that is not without foundation, when a coal-master could say, without emotion, that it was of no consequence how many workmen were killed, as he could get plenty of others.

(7.) No exertion should be spared to introduce and encourage savings' banks, benefit societies, libraries, reading-rooms, and other such institutions, into the mining districts, so as to foster habits of providence and intelligence.

And, finally, the spirit in which all of these improvements would require to be set agoing or carried on, should, in Mr. Tremenheere's words, be a "course of kind, forbearing, paternal, and generous treatment," on the part of the masters, "thus uniting their people to themselves in the bonds of mutual confidence and good will."

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* Tancred's *Report*, 1845.

ART. VI.—*Hand-Book for Travellers in Spain, and Readers at Home.* By RICHARD FORD. London, 1845.

MADRID, as Mr. Ford informs us, may now be reached in six days from London. But although political events occurring in Spain are rapidly transmitted to our Journals, and we have long had frequent intercourse with the principal Spanish seaports, it will surprise any reader of the interesting work before us to perceive, how very little is really understood in Britain of the true condition of the interior of the kingdom. "Spain is a *terra incognita* to naturalists, geologists, and every other branch of *ists* and *ologists*," says Mr. Ford (p. 77); and it may be added, that the actual state of the country has hitherto remained too much unknown, except in the most superficial manner, to the public of this kingdom.

Some of the causes which have produced this result are sufficiently obvious, and will be hereafter adverted to; but, assuredly, the absence of attractive interest cannot be ranked among these causes. There are few, if any, countries which more deserve attention than Spain, whether in respect to her past history, her present state of transition, or her future career. Possessed, in a remarkable degree, of the elements of national strength and greatness, Spain rose, after many struggles and much noble effort, to be for a time the arbitress among the nations both of the Old World and the New. But, speedily passing her zenith, she has now been descending, through successive centuries, with brief respite, from one stage of decline to another, until little else remains for the present but the Shade of a mighty Name. Decay is within her cities, and the desert among her plains—her highways are unfrequented and lonely—those great ports and naval arsenals, which furnished forth magnificent fleets from the days of the Armada to those of Trafalgar, are now almost, or altogether, without one solitary ship of war—and those soldiers who conquered at the Garigliano, and Pavia, and St. Quintin, or won kingdoms under Cortes and Pizarro, have been succeeded by the modern armies which fled before the French invaders of their country, with a facility that stripped even victory of its renown.

So melancholy a change in the fate of a great nation, it is profoundly affecting to contemplate; and all the more so, as it is borne with an apparent patience and resignation, which, had they been free from the taint of a too submissive indolence, would have lent something like dignity even to decline.

The true cause of the flow and ebb of Spanish greatness is

written, in obvious characters, in her history; it is fraught with instruction, and may be expressed in few words. Spain arose in the day of her freedom; from the hour when her civil and religious liberties were subverted, she has decayed: and her regeneration will only be assured from the date when those liberties shall once again be restored.

Under the consecutive reigns of Ferdinand and Isabella, Charles V., and Philip II., the outward grandeur of Spain was at its height. But it was in the same period that the seeds were surely sown of all her after decline. It was then that the powers of the nobility were broken, and the liberties of the people undermined. It was then that religious freedom was destroyed, and the modern Inquisition struck its roots deep into the heart of Spain. Of these two great evils, civil and religious despotism, acting with redoubled energy when combined, it is perhaps to the latter, working through the Inquisition, that the greater share of the modern decline of Spain may justly be ascribed. It was not the impious or the criminal, who was the object of hostility to the Inquisition. The great enemy which, with the instinct of self-preservation, it knew and hunted down, was the man who dared to assert the sacred right of freedom of conscience. With all its extensive organization for tracing and securing whomsoever was denounced as suspect—with its nefarious and stealthy procedure, basely contrived to take an unseen aim, and strike when least suspected—appealing to abject superstition, or to craven fear, as the human passions on which it had to work, and sapping the very foundations of society by sowing distrust between spouses, or infusing treachery into the breast of parent and child—the Inquisition spread its poison through the veins of the social system. And thus at length, working along with civil tyranny, it produced an utter prostration in the minds of all classes of the people, who found their only safety to consist in the abject surrender of freedom of thought and conscience to the Holy Office, as they had surrendered their whole temporal freedom to the king. It has been well observed, that the Inquisition presented "the most effectual barrier, probably, that was ever opposed to the progress of knowledge;" and that "the moral influence of this tribunal, eating like a pestilent canker into the heart of the monarchy, at the very time when it was exhibiting a most goodly promise, left it at length a bare and sapless trunk." *

It would have been interesting, had our limits permitted, to trace in some detail the present degenerate state of Spain, both

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* Prescott's Ferd. and Isab. i., 332, 333. See also Dunlop's Mem. of Spain, i., 12, and ii., 337.

morally and physically, to its true root, the extinction of civil and religious freedom. But we must now proceed to some analysis of the work before us, and have only been led into these prefatory observations, because the condition of that country incessantly forces upon the reader of Mr. Ford's work the inquiry, to what cause her mournful reverse of fortune is to be attributed; and the present position of Spain adds a double attraction to every such inquiry.

The "Hand-Book" purports to describe "the country and cities; the natives and their manners; the antiquities, religion, legends, fine arts, literature, sports, and gastronomy," of Spain; and at the same time to give notices of Spanish history. It is evident from this enumeration, that the subjects embraced by it are too varied and extensive to be exhausted in two duodecimos. But on each of these subjects, a store of valuable information, "the fruit of many years' wandering in the Peninsula," will be found. The work embraces a range of topics, from the imposing palace of "the vasty Escorial," down to the public kitchen of the humble *venta*, with its blackened walls, its range of pots and pipkins, and the sorry national cookery which smote the gastronomic stomachs of the French invaders with dismay. "A country with thousands of priests, and never a cook!" was the emphatic expression of the Frenchman's horror when he seized and occupied Spain.

To the traveller in Spain, such a work as the Hand-Book was previously a great desideratum; and by the reader at home it will be found to contain much both of instruction and entertainment.

Mr. Ford has consulted almost every variety of taste which is likely to be found among the different classes of travellers. For the sportsman, and especially the angler, a tour of the highest attraction is sketched, and numerous notices are incidentally given of "virgin, unwhipped streams, which would make old Izaak Walton's mouth water," (p. 687); and which will be found not a little tempting, by the modern lovers of "the gentle sport." If, again, the traveller be an admirer of the fine arts, or fond of legendary lore, or an antiquarian, or a geologist; or, in fine, if he propose to himself almost any other peculiar path of investigation, he will find a separate tour arranged which is specially adapted for his gratification.

So great a variety of subjects creates a difficulty in selecting what may best be brought under the more particular notice of our readers. At first, the numerous localities which are interesting, as connected with some of the more salient points of Spanish history, seemed to claim a preferable regard. Such, for instance, are the cave of Pelayo, in the Asturias, the

cradle of the Gotho-Spanish monarchy, (p. 710); and the bridge of Pinos in Granada, the spot where Columbus was overtaken by the messengers of Isabella, and once more brought back to her Court, after he had left it in disgust, and was thus far on his way to carry to another kingdom the proffered discovery of a new world, (p. 328.) Such, also, is Argamasilla del Alba, in Andaluçia, in the prison of which Don Quixote was composed, (p. 310): and such the pass in the desert heights near Almendin, still termed *El ultimo sospiro del Moro*, where the unhappy Boabdil, *el chico rey*, the last of the Moorish kings of Granada, took his farewell gaze at his home of the Alhambra, when wending his way in tears to exile in the Alpujarras. It was then that, according to the well known tradition, his mother, Ayeshah, addressed him: "thou dost well to weep like a woman, for that which thou hast not defended like a man," (p. 396.) Bitter, indeed, might the tears of the dethroned monarch have been, could he then have foreseen his posterity reduced to subsist on the alms which they begged at the mosque-doors in Fez!

But it would be too long to enumerate even a very few of the interesting localities in Spain, which would have pre-eminently claimed attention, had it been our purpose to make a selection of these from the Hand-Book. We shall, therefore, advert only to one other, the convent of St. Yuste, in Estremadura, which was the last retreat of Charles V., after he had resigned the throne, and which witnessed his strange proceeding, of having his own obsequies celebrated in his lifetime, when he caused himself to be laid in the coffin, and the service for the dead to be chanted over him. This curious act of mortification and penance, dictated by the feebleness of a mind impaired by severe illness, and haunted by superstitious fear, is discredited by Mr. Ford, (p. 552) apparently because it was not among any of the traditions of the monks whom he found at St. Yuste. But the statement of Robertson, and the authorities on which he relies, are not to be so lightly set aside.*

Giving up the design of noticing mere localities, however attractive from historical associations, it seemed most desirable to attempt to exhibit something of the actual condition of Spain and its people, as illustrated in Mr. Ford's work, that being always a matter of deep interest, and peculiarly so at the present moment.

In entering on this subject, even the most careless observer must be struck at the threshold with the want of vital union and reciprocal feeling, which exists between the several provinces of

* Robertson's *Charles V.*, Book 12.

Spain, to so great a degree as to render the national body politic rather a conglomerate of minor kingdoms, than one consolidated kingdom in itself. The provinces are, in many instances, physically separated from each other by the great mountain ranges which traverse the country, and the deficiency of inter-provincial communication by good roads. But they appear to have been equally kept asunder by the social and moral barriers, arising from prejudices, rivalries, habits, and modes of life, which, originating at an early period, have for ages been stereotyped in the several localities of Spain.

It is one result of this state of affairs, that a just view of the country cannot be taken without paying regard to the more prominent peculiarities of the several provinces, and combining this with the consideration of those subjects which are of a national character and pervade the kingdom generally. Either of these two classes of topics, the provincial or the national, if fully treated, would far more than exhaust our limits. But we shall endeavour first to give a short sketch of some of the characteristics of a few of the provinces, and then to consider some interesting particulars affecting the kingdom at large. Undoubtedly, any such attempt can be but imperfectly executed in the brief space to which it must be confined; and there are other modes of treating the work before us, which might, in various respects, be more attractive; but none appears, on the whole, so well adapted to attain the great object of elucidating, in some degree, the present condition of the Spanish nation.

Andaluçia, however important, is more familiar to British readers than many of the other provinces of Spain. Merely commending to attention the account which is given in the Hand-Book, of Seville and its celebrated cathedral—Cordova and its Mezquita—and Granada, with the Alhambra, we shall pass to other provinces less commonly explored. But it may be noticed, in doing so, as characteristic of the state of Spain, that in Andaluçia vast tracts exist of land, once cultivated and populous, now mere tenantless prairies, *dehesas y despobladas;* but evincing that they retain all their former fertility, by their "brilliant Flora, which is that of a hot-house growing wild. Flowers of every colour, like perfumed cups of rubies, amethysts, and topazes, filled with sunshine, tempt the stranger at every step."—P. 148.

Very different are the soil and climate of the "kingdom" of Galicia—though even there, in the warmer districts, such as the lower valleys of the Minho, the vine, the olive, and the orange abound. But, generally speaking, the country is mountainous, and the climate temperate and rainy. Galicia is well adapted for rearing any quantity of cattle; and to Englishmen the remark of Mr. Ford is interesting, that under our late tariff there is a

probability that this district will afford an increasing supply of live stock to the markets of Britain.

Galicia enjoys the unenviable distinction of being regarded as the Bœotia of the north-west of Spain. Its interior is comparatively unknown to the bulk of Spaniards themselves. Its hills provide a race of porters to both Spain and Portugal, somewhat as the Scottish Highlands used to furnish a tribe of caddies to their metropolis. Benighted ignorance, as usual, characterizes the peasants; though Compostella, the star-paved city of St. Iago, the tutelar saint of Spain, is in Galicia. Gross indeed must the superstition be, which devoutly believes in the well-known legend of St. Iago's voyage from Joppa to Galicia in seven days, after his head was cut off, steering himself all the way, in a boat of stone. But the existence of such credulity and infatuation is unfortunately not a provincial peculiarity, but a national trait; as fabulous legends, supported by forged miracles, have long superseded the Bible in many parts of Spain, and have proved a source of great wealth, and equal disgrace, to the Roman Catholic Church in that kingdom.

In Galicia the cottages are infested with vermin; and this also, by the way, appears to be a national, rather than a provincial characteristic. They are "full of dirt, smoke, and damp," and "the same room does for nursery, stable, kitchen, pig-stye, parlour, and all." The women often "do all the drudgery at home, in house and field," even labouring at the plough. They are never idle; and "the *Rueca*, or distaff, is part and parcel of a Gallega, as is a fan of an Andaluça." The men are a fine race, physically speaking, but they proved a sorry set of soldiers in the Peninsular campaigns. They speak a strange patois, with a "half singing, half whining accent," and containing a "confused jumble of words from many languages, but chiefly from the Spanish and Portuguese."* It is unintelligible to Spaniards in general—"*cependant, les Galliciens s'entendent entre eux.*" It would appear that the Gallegos are proverbially notorious as the most obstinate litigants in all Spain.—P, 648.

"The country," says Mr. Ford, "is not infested with robbers, for there are few travellers, and the Galicians pilfer rather in kitchens than on the highway." But whoever reads Borrow's amusing journey in Galicia, will find that even this very moderate amount of comparative praise, requires to be taken with considerable qualification.

Passing now, with Mr. Ford, into the adjoining "kingdom" of Leon, it appears to be peopled by a race of hardy, ill-educated agriculturists, who are backward enough to plough still in the

* Borrow's *Bible in Spain*, c. 25.

classical fashion " of Triptolemus and the Georgics." They are animated with a more kindly feeling towards the British, however, than most of their countrymen, and generally possess an honest simplicity of character. The practice of riding down cattle with the lasso still exists here as it does among their descendants in South America.

The dresses of Spaniards in general are often highly picturesque, varying from province to province, and they are minutely and curiously described in the Hand-Book. In Leon, although it appears that the people frequently dwell in mud hovels, and are in a miserable condition, yet " the peasant's dress near Ciudad Rodrigo and Salamanca, is peculiar and expensive; his Sunday costume is worth more than that of all the peers who attend early service at Whitehall chapel." For the details of this gay dress, and the corresponding dress of the female peasant (the *Charro y Charra* of the district,) we must refer to our author.—P. 559.

In Leon, around Astorga, are the Maragatos, " perhaps the most singular caste," says Borrow, " to be found amongst the chequered population of Spain. They have their own peculiar customs and dress, and never intermarry with Spaniards. Their name is a clue to their origin, as it signifies Moorish-Goths, and at the present day their garb differs but little from that of the Moors of Barbary. They are a nation of *arrieros*, or carriers, and almost esteem it a disgrace to follow any other profession."* Their fidelity to their trust is such that they will protect the goods confided to them at the hazard of their lives; and thus, although they charge much higher rates than others of the trade, " almost the entire commerce of nearly one-half of Spain passes through their hands."† Referring for fuller details of this curious race to our author and Mr. Borrow, it may serve as a sample of their singularities to be informed, that " the whole tribe assembles twice a-year at Astorga, at the feasts of Corpus and the Ascension, when they dance *El Canizo*, beginning at two o'clock in the afternoon, and ending precisely at three. If any one, not a Maragato, joins, they all leave off immediately."—P. 594.

Leaving the Leonese, it appears that in Estremadura, both Upper and Lower, there are vast districts of fertile land where the finest wheat might be raised in inexhaustible quantities, but which are abandoned to sheep walks. Under the Romans and the Moors, this province was both a granary and a garden; and it is still called by the Gipsies—that singular race which pretty strongly flavours the population of several provinces in Spain—*Chin del Manro*, the land of corn. The cities of Estremadura " are few and dull; their roads are made by sheep, not men; and their inns are mere stables for beasts," (p. 516.) The *Estre-*

* Borrow's *Bible in Spain*, c. 23. † Ibid.

menos are simple, kind-hearted, and contented. The chief stock of the province is sheep, and the famous merino sheep are here. The term merino, by the way, "is said to be derived from marino, because the original breed of sheep was imported by sea from England" in the time of Henry II. (P. 517.) Large flocks of sheep, containing 10,000 in each, have their summer quarters in the higher districts of the province, and come down to the plains in winter. Some of these flocks travel over a distance of 150 leagues; and a free sheep walk, 90 paces wide, is kept for them on each side of the highway "which entirely prevents enclosure and good husbandry." The fleece of the sheep which migrate is finer than that of those which are kept stationary. The flesh is inferior, "as no Estremenian ever has dreamed of putting a Merino fleece on a Southdown carcase." The listless shepherds, says Mr. Ford, laconically, "are mere brutes, like the animals with whom they live, and in whose skins they are clothed." But their avocation is more popular than that of tillage, which requires fixed residence, foresight, some machinery, and much steady labour—all which is escaped by the man who spends his life in wandering after sheep.

Estremadura is famous for its swine, which find food with ease in those woods of oak, beech, and chestnut which cover great districts of the province.

"The pigs are turned out in legions from the villages, which more correctly may be termed coalitions of pig-styes; they return from the woods at night, and of their own accord, like the cattle of Juno. (*Livy*, 243.) On entering the hamlet, all set off at a full gallop, in a handicap for home, into which each single pig returns, never making a mistake; there he is welcomed like a prodigal son or a domestic father."

The hams and sausages of Estremadura have always been celebrated, and well they may, if they actually perform the feat of inspiring the imagination of the poets who devour them. As to this, it is said by the biographer of the great Lope de Vega, that he "never could write poetry unless inspired by a rasher."

Estremadura has but a scanty population.

"Sheep, pigs, locusts, and doves, for hours and days, will be the only living things which the traveller will see in these *despobladas*. You may ride for leagues without meeting a human being."

The scarcity of men, however, is productive of one advantage:

"The roads are solitary and safe; where there are no travellers except sheep, why should there be robbers?"

The following remarkable sketch of the natives of Estremadura, throws a melancholy light, not merely on that province, but on too large a portion of the whole of Spain:—

"The *Estremenos* live, in their isolated province, like the Murcians, in little intercommunication with the rest of mankind; here the moral

and material obstacles to the prosperity of Spain are painfully exemplified; ignorance, indolence, and insecurity, combine with poverty and an absence of small proprietors; here is alike a want of fixed capital in the landlord as of circulating capital in the tenant. The backward population is indifferent even to amelioration."

Most cordially do we concur in the remark of our author, that,

"Bad government, civil and religious, was the real cause of this abomination of desolation, which all who run in Estremadura may read; but this people always loves to look for causes from *without* of those failures which are the necessary results of causes *within*."—P. 516.

The two Castiles, Old and New, form a large portion of "the central plateau of Spain, of which they are truly *el Coro y Castilla*, the heart and citadel. The Castilians have a singular antipathy to trees, and, like Orientals, they seldom plant any except those which bear fruit, or give shelter for their *alamedas*." Water is very scarce, and fuel and timber are dear. "Nature and man are alike adust and tawny; everything is brown, his house, his jacket, his wife, and his ass." Amid the finest wheat districts in the world, which yield a great return, "even with an agriculture slovenly as that in Barbary," the peasantry are in a state of poverty and ignorance. There are not many isolated farms, "as a general insecurity forces men to congregate for mutual protection." The cottages of the few hamlets which exist, are often built of mud, or bricks dried in the sun, and the openings for windows are without glass. So little energy or resource appears to exist in the people, that, in some instances, ever since the French invaders tore off the roofs of their cottages for camp fires, and the uncovered walls became decomposed by the rain, the huts have not been rebuilt. Thus,

"Many agricultural families, especially about Ocana, as near Guadix, burrow in the hill sides, and live in holes fitter for beasts than men. The labour of the inmates is increased by the distance of their residence from their work: they have to start long before daybreak, and return weary as their cattle after nightfall. Generally speaking, both man, woman, and child, are overworked in the fields of Spain, where human bone and sinew supply the want of the commonest machinery; yet, from knowing no better, the Castilian does not complain, nay, the peasants among themselves are as fond of amusement as children, and full of raillery, mother-wit, and practical joking."—P. 718.

The pride and *Espanolismo* of the Castilian, have long been proverbial. "All feel equal to the proudest noble through their common birth-right of being Castilians." They have many good qualities; they are not addicted to low degrading vices; and although "proud, obstinate, ignorant, prejudiced, superstitious, and uncommercial," yet, on the whole, Mr. Ford thinks they "contain the virility, vitality, and heart of the nation, and the

sound stuff of which it is to be reconstructed." With all this, it is a striking characteristic of the state of Spain, when it is stated by way of comparative praise, that "the *Castellano* is *less* addicted to murder and treachery than the irritable native of the south and south-east provinces."—P. 719.

Our limited space will prevent us from making any further extracts of a strictly provincial character; and in proceeding to notice some of those features in the condition of Spain which are common to the kingdom at large, it is striking, as already remarked, to observe the state of decay of many of the towns and cities, contrasted with their former splendour. Cordova, we are told, in the 10th century, under the Moors, "had nearly a million of inhabitants." It has now a population "under 60,000, or as some say, and probably correctly, 45,000," (p. 296.) The old imperial city of Toledo, "the widowed capital of two dynasties," which is said to have formerly had a population of 200,000, only contains now about 15,000 inhabitants. It is "a place of palaces without princes, convents without monks, and *exclaustrados* without bread," (p. 840). And a town of more modern greatness, El Ferrol, "like La Carraca and Cartagena, is a sad emblem of Spain herself; the population has dwindled down to some 13,000, and is poverty-stricken and unemployed. It is the silence and decay of the church-yard, not the bustle and vigour of the dock-yard, in which, in 1760, 50,000 men toiled, and where in 1752, 55 men of war floated." Now there would appear to be left but two line-of-battle ships, "little better than wrecks."

In some cases, as in that of Cordova, an attempt may be made to explain this decline, by referring to the wars with the Moors, and the overthrow of their empire, involving with it the fate of their chief cities; in others, as in that of Toledo, by referring to the caprice of Charles V., a Fleming and foreigner, who gave all the court patronage to the "upstart" capital of Madrid; or, in other cases, as that of Ferrol, by referring to the extinction of the Spanish navy. But all these explanations rather serve to describe the fate of the country, than to account for its failure to repair losses, or bear changes, similar to those which, in other countries, have been repaired or compensated, by the energies of the people.

It would be foreign to the purpose of our commentaries on the Hand-Book, to advert to any of the great public buildings of Spain, merely as such; though Mr. Ford has collected much curious matter respecting many of these. But there is one of these structures, so peculiar in its origin and design, that it possesses interest as an exponent of the national character at the period when it was built; and, therefore, though its history is

well known, we may be excused for briefly noticing it. We refer to the immense fabric reared by Philip II., who has thence been occasionally termed El Escorialense as the founder of the Escorial.

Philip is well described by Mr. Ford as "cold, phlegmatic, suspicious, timid, and arbitrary,—a type of Spain in the 16th century, and a despot in politics and polemics." On account of the great victory of St. Quintin, which was gained over the French in 1557, on the day consecrated to the Aragonese Saint Lorenzo, the grateful monarch vowed to build a church, a monastery, and a palace, in honour of that saint and martyr. He resolved on combining all these in one great edifice; and as Saint Lorenzo, according to tradition, had been roasted to death on a gridiron, Philip enjoined the architect of the Escorial to plan the edifice, so that it should take the shape of the instrument of the Saint's martyrdom. It may be conceived how severely the ingenuity of the artist must have been taxed by the royal mandate, and how nearly he must himself have suffered, as it were, a second martyrdom, upon the grand architectural gridiron which was to hand down his own professional fame to posterity. But he executed his task. The interior of a great rectangular parallelogram, 744 feet by 580, "is divided," we are informed, "into courts, which represent the intersections of the bars of a gridiron, while the handle forms the royal residence; the feet are supplied by the four towers at the corners," (p. 811.) On the erection of this untoward structure did Philip, for more than twenty years, lavish immense sums of money annually, until, notwithstanding the defects of its design, the vast and sombre pile became imposing from its grandeur, and was long regarded as the most magnificent palace in Europe. It now remains the gloomy memorial of a dark and bigoted age: but a memorial which unfortunately has been ever too much in harmony with the spirit of the successive generations of Spaniards, which have come and gone since the day when it was founded.

Proceeding according to the plan already mentioned, with the notice of a few of the more interesting particulars respecting the social condition of the Spanish kingdom, as detailed in the Hand-Book, one of the first subjects of national importance there treated, is the state of the roads and conveyances in Spain. The highways of a kingdom are the channels of internal communication, and, as it were, the arteries of the circulation of the social system. Their condition affords one very valuable test of the state of the country. We are accustomed in Britain to a national community, the members of which, from north to south, are blended and fused together, by railroad and steamer, in the most frequent and inti-

mate personal intercourse. We have intelligence daily radiated to and from the capital, and pervading the whole length and breadth of the kingdom; giving to all a common centre, and subjecting all to a common impulse. But in this, Spain is yet not far removed from the social antipodes of Britain. So great a source of national weakness, and so remarkable an impediment to national improvement, as this absence of easy and frequent internal communication, can scarcely receive too much attention, in forming an accurate estimate of the present state of the country.

The obstructions to internal intercourse in Spain are partly physical and partly moral. Both classes of obstruction are very fully illustrated by Mr. Ford.

It appears, from details which are sufficiently entertaining, but rather too long to be extracted, that mails and diligences are as yet established only on the principal high roads connected with Madrid: elsewhere, all who cannot ride must betake themselves to the antiquated and expensive voiturier system of locomotion. The carriage, or "real Spanish *coche de colleras*," is a huge cumbrous machine, drawn by six mules, and has undergone little change during the last two centuries. To this vehicle the mules are harnessed with ropes:—

"The tackle is laid out on the ground, and each beast is brought into his portion of the rigging. The start is always an important ceremony. When the team is harnessed, the *mayoral* (driver) gets all his skeins of ropes into his hand; the *zagal* (his helper or cad) his sash full of stones; the helpers at the *venta* (inn) their sticks; at a given signal, all fire a volley of words and blows at the team, which, once in motion, continues at a brisk pace, performing from twenty-five to thirty miles a day."

The functions of the *zagal* are sufficiently arduous.

"He runs by the side of the carriage, picks up stones to pelt the mules, ties and unties knots, and pours forth a volley of blows and oaths from the moment of starting to that of arrival. He sometimes is indulged with a ride by the side of the *mayoral* on the box, when he always uses the tail of the hind mule to pull himself up into his seat."

Observe, if the vehicle should meet a *mal passo*, and stick fast in the mud, "push it out *backwards;* the more you draw it forwards, the deeper you get into the mire," (p. 33.) The oaths which the drivers shower upon their cattle are "limited only by the extent of their anatomical, geographical, astronomical, and religious (?) knowledge; *un muletier à ce jeu vaut trois rois.*"

In the nearly total absence of all river or canal navigation in Spain, such a state of travelling as that above described, on all but the principal high roads to Madrid, even after every allow-

ance is made for riding on horse or mule, affords a striking measure of the vast distance at which Spain is still left behind in even the most necessary elements of political and social organization. If any one can estimate the interval between the state of conveyance by railway and that by a *coche de colleras*—almost as great as the interval between a man-of-war and a canoe—he will have made one step in taking an estimate of the backward condition of modern Spain, and perhaps also in forming a desire to see the resources of that great country developed, to her own unspeakable gain, as well as that of the whole family of civilized nations.

But the moral obstacles to internal communication in Spain, are at least as remarkable as the physical, and one class of them is most painfully illustrative of the disorganized condition of the country. This will be found in Mr. Ford's chapter entitled "Robbers, and precautions against them," and exhibits to a painful extent a state of society bordering on dissolution :—

"Robbery in other countries has yielded to increased population, to more rapid and more frequent intercommunication. The distances in Spain are very great: the high-roads are few, and are carried through long leagues of uncultivated plains, '*dehesas*,'—through deserted towns, dispeopled districts, '*despobladas*,' a term more common in Spain, as in the East, than that of village is in England. Andaluçia is the most dangerous province, and it was always so. This arises from the nature of the country, from being the last scene of the Moorish struggle; [which dates, by the way, as far back as the close of the 15th century, and indicates a somewhat chronic state of this social disorder;] and now from being in the vicinity of Gibraltar, the great focus of *smuggling*, which prepares the raw material for a banditti.

"First and foremost come the '*ladrones*,' the robbers on a great scale; they are a regularly organized band, from eight to fourteen in number, well armed and mounted, and entirely under the command of one leader. These are the most formidable; and as they seldom attack any travellers except with overwhelming forces, and under circumstances of ambuscade and surprise, where everything is in their favour, resistance is generally useless, and can only lead to fatal accidents; it is better to submit at once to the summons, which will take no denial, of '*boca abajo*,' '*boca a tierra*,' 'down, mouth to the earth.' Those who are provided with such a sum of money as the robbers think according to their class of life, that they ought to carry about them, are very rarely ill-used; a frank, confident, and good-humoured surrender generally not only prevents any bad treatment, but secures even civility during the disagreeable operation: pistols and sabres are, after all, a poor defence, as Mr. Cribb said, compared to civil words and deeds. The Spaniard is by nature high-bred and a '*caballero*,' and responds to any appeal to qualities of which his nation has reason to be proud: notwithstanding these moral securities, if only by way of making assurance doubly sure, an Englishman will do well,

when travelling in exposed districts, to be provided with a bag containing fifty to one hundred dollars, which makes a handsome purse, feels heavy in the hand, and is that sort of amount which the Spanish brigand thinks a native of this proverbially rich country ought to have with him on his travels. He has a remarkable tact in estimating from the look of an individual, his equipage, &c., how much ready money it is befiting his condition for him to have about him; if the sum should not be enough, he resents severely the depriving him of the regular spoil, to which he considers himself entitled by the long-established usage of the high-road. The traveller who is unprovided altogether with cash is generally made a severe example of, *pour encourager les autres*, either by beating, '*echandole palos*,' or by stripping to the skin, '*dejandole en cueros*,' after the fashion of the thieves of old, near Jericho. The traveller should be particularly careful to have a watch of some kind—one with a gaudy gilt chain and seals, is the best suited: not to have a watch of any kind exposes the traveller to more certain indignities than a scantily filled purse. The money may have been spent, but the absence of a watch can only be accounted for by a premeditated intention of not being robbed of it, which the '*ladron*' considers as an unjustifiable attempt to defraud him of his right. It must be said, to the credit of the Spanish brigands, especially those of the highest class, that they rarely ill-use women or children; nor do they commence firing or offering violence unless resisted. The next class of robbers—omitting some minor distinctions, such as the '*salteadores*,' or two or three persons who lie in ambuscade and jump out on the unprepared traveller—is the '*ratero*,' 'the rat.' He is held in contempt, but is not less dangerous. He is not brought regularly up to the profession and organized, but takes to it, *pro re natâ*, of a sudden commits his robbery, and returns to his pristine vocation. Very often, on the arrival of strangers, two or three of the ill-conditioned worst classes get up a robbery the next day for the special occasion, according to the proverb '*la ocasion hace al ladron*.' The '*raterillo*,' or small rat, is a skulking footpad, who seldom attacks any but single and unprotected passengers, who, if they get robbed, have no one to blame but themselves; for no man is justified in exposing Spaniards to the temptation of doing a little something in that line. The shepherd with his sheep, the ploughman at his plough, the vine-dresser amid his grapes—all have their gun, which, ostensibly for their individual protection, furnishes means of assault and battery against those who have no other defence but their legs and virtue.

"The regular first-class '*ladrones*' are generally armed with a blunderbuss, '*retajo*,' which hangs at their saddles, the high-peaked '*albarda*,' which is covered with a fleece, either white or blue, the '*zalea*.' Their dress is for the most part very rich and in the highest style of '*aficion*,' 'the fancy;' they are the envy and models of the lower classes of Andaluçians, being arrayed after the fashion of the smuggler, '*contrabandista*,' or the bull-fighter, '*torero*,' or in a word, the '*majo*,' or dandy, who, being peculiar to the south of Spain, will be more properly described in Andaluçia, which is the home and head-

quarters of all those who aspire to the elegant accomplishments and professions to which we have just alluded.

"Since these evils have so long been notorious, it is natural that means of prevention should likewise exist. If the state of things were so bad as exaggerated report would infer, it would be impossible that any travelling or traffic could be managed in the Peninsula. The mails and diligences, as we have said, are protected by Government, and are very seldom attacked; those who travel by other methods, and have proper recommendations, will seldom fail in being provided by the captain-generals, or the military commander in smaller districts, the '*commandante las armes,*' with a sufficient escort. A regular body of men was organized for that purpose all over Spain; and were called '*Miquelites,*' from, it is said, one Miquel de Prats, an armed satellite of the famous or infamous Cæsar Borgia. In Catalonia they are called '*Mozos de la Escuadra;*' they are the modern 'Hermandad,' the brotherhood which formed the old Spanish rural armed police. They serve on foot, like a sort of dismounted gendarmerie, and are under the orders of the military powers. They are composed of picked and most active young men; they are dressed in a sort of half uniform and half *majo* costume. Their gaiters are black instead of yellow, and their jackets of blue trimmed with red. They are well armed with a short gun and the '*canama,*' or belt round the belly, in which the cartouches are placed, a much more convenient contrivance than our cartouche-box; they have a sword, a cord for securing prisoners, and a single pistol, which is stuck in their sashes, at their backs. This corps is on a perfect par with the robbers, from whom some of them are chosen; indeed, the common condition of the '*indulto,*' or pardon to robbers, is to enlist, and extirpate their former associates,—set a thief to catch a thief; both the honest and renegade *Miquelites* hunt '*la mala gente,*' as gamekeepers do poachers. The robbers fear and respect them: an escort of ten or twelve *Miquelites* may brave any number of banditti, who never or rarely attack where resistance is to be anticipated. The *Miquelites* are commanded by a corporal of their own, and in travelling through suspected spots show singular skill in taking every precaution, in throwing out skirmishers in front and at the sides. They cover in their progress a large space of ground, taking care never to keep above two together, nor more distant from each other than gunshot; rules which all travellers will do well to remember, and to enforce on all occasions of suspicion. The rare instances in which Englishmen, especially officers of the garrison of Gibraltar, have been robbed, have arisen from a neglect of this precaution; when the whole party ride together they may be all caught at once, as in a trap. It may be remarked that Spanish robbers are very shy in attacking armed English travellers, and particularly if they appear on their guard. The robbers dislike fighting. They hate danger, from knowing what it is; they have no chivalrous courage, or abstract notions of fair play, any more than a Turk or a tiger, who are too uncivilized to throw away a chance: accordingly, the Spanish robbers seldom attack where they anticipate resistance,

which they all feel they will assuredly meet from Englishmen. They have also a peculiar dislike to English guns and gunpowder, which, in fact, both as arms and ammunition, are infinitely superior to the ruder Spanish weapons. Though three or four Englishmen have nothing to fear, yet where there are ladies it is always far better to be provided with an escort of *Miquelites.* These men have a keen and accurate eye, and are always on the look-out for prints of horses and other signs, which, escaping the notice of superficial observers, indicate to their practised observations the presence of danger. The *Miquelites* are indefatigable, keeping up with a carriage day and night, braving heat and cold, hunger and thirst. As they are maintained at the expense of the Government, they are not, strictly speaking, entitled to any remuneration from those travellers whom they are directed to escort; it is, however, usual to give to each man a couple of *pesetas* a-day, and a dollar to their leader. The trifling addition of a few cigars, a '*bota*' or two of wine, some rice and dried cod-fish, '*bacalao,*' for their evening meal, is well bestowed; exercise sharpens their appetites; and they are always proud to drink to their master's health, and are none the worse for his food."—Pp. 39, 40, 41.

After some sound advice to travellers to take with them what is essential, to trust as little as possible to supplies by the way, and to leave all over-daintiness at home, Mr. Ford returns to the subject of protection against robbers in the following terms:—

"Those, whether natives or foreigners, who cannot obtain or afford the expense of an escort to themselves, avail themselves of the opportunity of joining company with some party who are enabled to do so. It is wonderful how soon the fact of an escort being granted is known, and how the number of travellers increases who are anxious to take advantage of the convoy. As all go armed, the united allied forces become more formidable as the number increases, and the danger becomes less. If no one happens to be travelling with an escort, then travellers wait for the passage of troops, for the Government's sending money, tobacco, or anything else which requires protection. If none of these opportunities offer, all who are about to travel join company. This habit of forming caravans is very oriental, and has become quite national in Spain. It is almost impossible to travel alone; others will join; weaker and smaller parties will unite with all stronger and larger companies whom they meet, going the same road, whether the latter like it or not."—Pp. 42, 43.

It seems proper to add the remark of Mr. Ford, that

"Everybody in Spain travels armed to the teeth, and arrayed in a sort of costume for the road; and as all are cloaked and muffled up alike, a peculiar bandit-look is common to most persons one meets outside of a town."

And he suggests the consideration, that all this tends to produce an exaggerated impression on the minds of strangers respecting the actual numbers of *boná fide* highwaymen.

Such are the views stated by a writer of ample experience, and of very friendly dispositions to the people of Spain. They are offered by way of advice to travellers, and, we doubt not, contain important practical advice to them. But, so far from having diminished the pre-existing impression in this country respecting the robber-system in Spain, as Mr. Ford intended, we are mistaken if they will not greatly strengthen it. It would be difficult to find, within the same compass, a more striking portraiture of the social disorganization of a civilized country. The mail or diligence "protected by the Government," and "very seldom attacked;" the escorts of Miquelites, recruited in part from reclaimed robbers, which are officially furnished to other travellers, who have proper recommendations; the alacrity of all travellers, on hearing of an escort, to seek it out and join it, and failing this, the formation of a caravan, where every traveller is armed to the teeth;—all indicate a degree of insecurity, and a feebleness in the protective power of the law, which savour more of the progress of a caravan in the desert, than a journey through a kingdom which was formerly in advance of either France or Britain in civilization. Truly they call to mind the saying, that, in many respects, Africa has its beginning at the Pyrenees.

The Beggar-system in Spain is another unfortunate and prominent feature in its social condition. It would appear that the members of this profession, in their mutual intercourse, punctiliously observe the ceremony of addressing each other in terms which, in this country, would be thought the most impertinent satire.

"Here every beggar addresses a brother mendicant as *Señor*, *Don*, and *Caballero*, as a lord and knight."—P. 720, *note*.

"They are now an increased and increasing nuisance. The mendicant plague rivals the moskitos; they smell the blood of an Englishman: they swarm on every side; they interrupt privacy, worry the artist and antiquarian, disfigure the palace, disenchant the Alhambra, and dispel the dignity of the house of God, which they convert into a lazar-house and den of mendacity and mendicity. They are more numerous than even in the Roman, Neapolitan, and Sicilian States. They form the train of superstition and misgovernment which defile the most beautiful, and impoverish the richest portions of the earth.

"The Spanish beggars are dead to all shame; indeed, as Homer says, that feeling is of no use in their profession. They wear away the portals of the churches; they sit before the Beautiful gate, the old and established resort of cynics and mendicants, (Juv. iii. 296). There they cluster, like barnacles, unchanged since the days of Martial, (iv. 53), with their wallet, staff, dog, filthy tatters and hair, and barking importunity."—P. 171.

Unhappily it stands recorded, that in the troublous changes of Spain, so many of those who once knew better days, have been reduced to poverty, that "even canons and dignitaries," in ab-

solute distress, have "solicited charity from the passing Englishman." And Borrow states, in his melancholy account of the decay of the great naval arsenal of Ferrol, that

"Half the inhabitants beg their bread; and amongst these, it is said, are not unfrequently found retired naval officers, many of them maimed or otherwise wounded, who are left to pine in indigence: their pensions, or salaries, having been allowed to run three or four years in arrear, owing to the exigencies of the times. A crowd of importunate beggars followed me to the *posada*, and even attempted to penetrate to the apartment to which I was conducted. 'Who are you?' said I to a woman who flung herself at my feet, and who bore in her countenance evident marks of former gentility. 'A widow, sir,' she replied, in very good French; 'a widow of a brave officer, once admiral of this port.'"—(*Borrow's Bible in Spain*, cap. 31.)

Painful as is this state of matters, it must not be regarded as occurring now for the first time in Spain, where innovations of any kind are so rare. The Spanish soldiery, towards the close of the seventeenth century, were so ill clothed and ill paid, that they both robbed and begged, to help out their pay. And a French traveller (Labat) saw even some of the inferior officers asking alms on the streets of Cadiz and in the garrison towns of Flanders:—

"Mais on doit dire," he adds, "*à leur louange*, qu'il n'y a rien de bas dans leur manière de demander: ils conservent toute leur gravité, et leur fierté; et semblent plûtôt vous faire plaisir en recevant vôtre aumône, que vous en avoir obligation."

The Spanish beggar is said to be devoid of all shame. It is therefore a little puzzling to explain how his importunities should be at once put down, as Mr. Ford states they invariably are, by the simple specific of using the form of words quoted below, which would appear to derive their efficacy from the formality and ceremony in which they are couched, and which, by raising the beggar to a level (so to say) with his repulser, appear to be felt by him as checkmate. As to the efficacy of the specific, Borrow has borne testimony; and Washington Irving, in one of his tales of the Alhambra implies the same thing. He makes his old Spanish beggar there relate that, after receiving from several individuals a repulse, given in the terms about to be quoted, he at length laid himself down to starve, and call upon the Virgin; but addressed no second petition for alms to any one of his fellow-mortals.

"In Spain, the specific which operates like brimstone, the plea to which there is no demurrer, is this—and let the traveller character the form on the tablet of his memory—*Perdone V^md. por Dios Hermano!* My brother, let your worship excuse me, for God's sake!

The beggar bows—he knows that all further application is useless; the effect is certain if the words be quietly and gravely pronounced."—P. 173.

In addition to the Robber-system and the Beggar-system, there is a third extensive organization, which, as drawn by Mr. Ford, unhappily forms a companion portrait to both of these,—we mean the Smuggler-system in Spain.

The extent to which the wretched fiscal regulations of Spain breed daring smugglers, and render them popular with all classes, affords striking evidence of the evils which blind and ignorant rulers may inflict on a country. The suicidal avarice of the Spanish Exchequer is a fruitful source of demoralization to the people, and weakness to the Government; and, indeed, it seems to be well ascertained that the swarms of *contrabandistas* require nothing but opportunity to be converted into bands of robbers. They abound in many of the provinces.

"The Ronda smugglers (in Andaluçia) are some of the finest and most picturesque of their numerous tribe in Spain; their illegal pursuit is, in fact, the only real, active, and well organized system of the Peninsula. Mr. Macgregor, in his commercial report on Spain, (London, 1838), calculates that 300,000 persons are directly and indirectly interested in this vocation. Everybody smuggles more or less."

This system

"is the curse of Spain and Spaniards; it fosters a body of reckless, active, armed men, who know the country well, and are ready for any outbreak."

And, to crown all, the officers of the Spanish preventive service are so ill paid, that they eke out a livelihood by conniving with the smuggler. "An empty sack cannot stand upright," says the pithy Spanish proverb. In Catalonia, "every body smuggles, especially the custom-house officers, commissioners, and preventive guards," (p. 463.) It is in fine keeping with the character of these gentry, that, "while they facilitate smuggling on a large scale, by acting as confederates with the *contrabandistas*, who bribe them, they worry the honest traveller;" and, in short, says Mr. Ford,

"A Spanish *aduanero* (custom-house officer,) may be defined to be a gentleman who pretends to examine baggage, in order to obtain money without the disgrace of begging, or the danger of robbing."—P. 205.

Turning now to a different aspect of the social state of the country, it will be found that the information supplied by Mr. Ford respecting the medicine and surgery of Spain, is not a little illustrative of Spanish characteristics. It appears that the hospitals are neglected; the faculty, even at Madrid, "are at least a century behind

the practitioners of England;" and they retain the oriental aversion to resort to the practice of dissection, in pursuing their anatomical studies. What species of operator he must be, who confines himself to the use of plates and models, until the moment when he is called in to treat a living subject, it may be left to his unhappy patients to say. But with all this there is a great outward show of colleges, professors, lectures, and diplomas. And the medical men, with that inordinate self-esteem, which unfortunately is one of the most Spanish of all the *Cosas de España*, "hold themselves to be the first physicians and surgeons on earth, and best qualified to wield the shears of the *Parcæ*." Were any well meaning, but simple friend, even to hint a doubt on this subject, he forthwith "would be set down as malevolent, envious, and an ass, for they think their ignorance the perfection of human skill." In one short sentence Mr. Ford has condensed the defective character of the medical faculty, when he says "their notions and practice are *classical*, *oriental*, and *antiquated*, and their acquaintance with modern works, inventions, and operations, very limited."—P. 174.

Considering the important influence which the medical profession exercises on society, we must still make room for the following extracts. They throw equal light on both doctor and patient:—

"Most Spaniards who can afford it, have their family doctor, or *Medico de Cabecera*, and their Confessor. This pair take care of the bodies and souls of the whole house, bring them gossip, share their *puchero*, purse, and tobacco. They rule the husband through the women and the nursery; nor do they allow their exclusive privileges to be infringed on. Etiquette is the life of a Spaniard, and often his death. Every one knows that Philip III. was killed, rather than violate a form. He was seated too near the fire, and, although burning, of course as king of Spain the impropriety of moving himself never entered his head; and when he requested one of his attendants to do so, none, in the absence of the proper officer whose duty it was to superintend the royal chair, ventured to take that improper liberty. In case of sudden emergencies among her Catholic Majesty's subjects, unless the family doctor be present, any other one, even if called in, generally declines acting until the regular Esculâpius arrives. An English medical friend of ours saved a Spaniard's life by chancing to arrive when the patient, in an apoplectic fit, was foaming at the mouth and wrestling with death; all this time a strange doctor was sitting quietly in the next room smoking his cigar at the *brasero* with the women of the family. Our friend instantly took 30 ounces from the sufferer's arm, not one of the Spanish party even moving from their seats,—*hunc sic servavit Apollo!*

"The Spanish medical men pull together—a rare exception in Spain—and play into each other's hands. The family doctor, whenever ap-

pearances will in anywise justify him, becomes alarmed, and requires a consultation, a *Junta.* What any Spanish Junta is, need not be explained; and these are like the rest, they either do nothing, or what they do do, is done badly. At these meetings from three to seven *Medicos de apelacion,* consulting physicians, attend, or more, according to the patient's purse; each goes to the sick man, feels his pulse, asks him some questions, and then retires to the next room to consult, generally allowing the invalid the benefit of hearing what passes. The *Protomedico,* or senior, takes the chair; and while all are lighting their cigars, the family doctor opens the case, by stating the birth, parentage, and history of the patient, his constitution, the complaint, and the medicines hitherto prescribed. The senior next rises, and gives his opinion, often speaking for half an hour; the others follow in their rotation, and then the *Protomedico,* like a judge, sums up, going over each opinion with comments: the usual termination is either to confirm the previous treatment, or order some insignificant *tisana:* the only certain thing is to appoint another consultation for the next day, for which the fees are heavy, each taking from three to five dollars. The consultation often lasts many hours, and is a chronic complaint. It occurred to our same medical friend to accidentally call on a person who had an inflammation in the cornea of the eye: on questioning he found that many consultations had been previously held, at which no determination was come to until at the last, when sea-bathing was prescribed, with a course of asses' milk and Chiclana snake-broth. Our heretical friend, who lacked the true *Fe,* just touched the diseased part with caustic. When this application was reported at the next *Junta,* the *Medicos* all crossed themselves with horror and amazement, which was increased when the patient recovered in a week."—Pp. 175, 176.

It should perhaps be noticed in passing that there are two versions of the death of Philip III., and that "all the Spanish historians are indignant at the anecdote (above quoted,) which they treat as a contemptible French invention."*

We shall conclude our extracts with the account which our author gives of the hotels and inns of Spain. It serves to illustrate the actual condition of the country, and will not a little surprise those whose observation has been limited only to the comfortable hotels of Britain. Mr. Ford remarks, that—

"As the higher orders in Spain seldom travel, and never for pleasure; and as the other classes are poor, inured to roughing it, and easily contented, there has been no demand for those comfortable hotels which we have taught the continent."

Accordingly, the inns of Spain have been "divided by wags," into three great classes—"the bad, the worse, and the worst."

Passing by the few *fondas,* or hotels, which exist only in the

* Dunlop's *Mem. of Spain,* i. 4.

largest towns and seaports, a description of the *Posada*, "the genuine Spanish inn," will be found not a little curious. Such also is the account of the *Venta* which appears to be a *posada* of a lower sort, and takes the superlative rank in the above classification,—

"The *posada*, as a public inn, is, strictly speaking, bound only to furnish lodging, salt, and the means of cooking whatever the traveller brings with him, or purchases in the village."

Mr. Ford here judiciously advises an English traveller, arriving at a *posada*, to expect little, and thus he will escape disappointment; to feel no surprise, except on "those rare occasions when he finds anything actually ready at a *venta*;" and, on the whole, to compare the *venta* rather with the *khans* of the east, than with the inns of civilized Europe.

In the *ventas*, it is a redeeming feature, however, that

"the accommodation for the *beast* is excellent: cool, roomy stables, ample mangers, a never-failing supply of fodder and water, all ready —every comfort and luxury which the animal is capable of enjoying is on the spot; as regards *man*, all is the reverse—he must forage abroad for anything he may want. Only a small part of the barn is allotted him; and then he is lodged among the beasts below, or among the trusses and sacks of their food in the lofts above. He finds, in spite of this, that if he asks the owner what he has got, he will be told that there is *every thing—hay de todo;* which too often means, in reality, every thing *that he has brought with him himself;* which, as regards anything at all out of the way, is the safest and usual plan. The *ventero* seldom has anything himself; every thing wanted is to be procured out of doors, in small shops, and frequently not at all."

These shops, by the way, were often little monopolies of the adjoining lord of the soil.

The *ventas* have sometimes an imposing exterior,

"while all within is dark, dirty, and dilapidated. The ground floor is a sort of common room for men and beasts. The portion appropriated to the stables is often arched over, and very imperfectly lighted, to keep it cool, so that even by day the eye has some difficulty at first in making out the details. The ranges of mangers are fixed round the walls, and the harness of the different animals suspended on the pillars which support the arches. A wide door, always open to the road, leads into this great stable, or common hall; a small space in the interior is always left unencumbered, into which the traveller enters on foot or on horseback. No one greets him; no obsequious landlord, bustling waiter, or simpering chambermaid takes any notice of his arrival. He proceeds, unaided, to unload or unsaddle his beast; and having taken him to a manger, applies to the ventero for the '*pienso*,' fodder for his beasts; '*ganado*,' that is '*paja y cebada*,' straw and barley. This is the ancient oriental forage,—'Barley also and

straw for the horses,' (1 Kings, iv., 28.) Very little hay is used in Spain, except in the north-western provinces and in some of the valleys."—P. 25.

After taking care of his beast,

" the traveller thinks of himself. One, and the greater side of the building, is destined to the cattle—the other to their masters. Immediately opposite the public entrance is the staircase, which leads to the upper part of the building, which is dedicated to the lodgment of fodder, fowls, fleas, and the better class of travellers."—P. 26.

It is another proof of the stationary condition of Spanish habits, to find that a lively French writer, Madame d'Aulnoy, describing the *venta* of the 17th century, sketches an outline so similar to that of Mr. Ford, and states that " they are all alike."

" When you come into one of them, wearied and tired—roasted by the heat of the sun, or frozen by the snows—you see neither pot on the fire, nor plates washed. You enter into the stable, and from thence to your chamber. The staircase by which you go up is very strait, and rather resembles a steep ladder; you are then shewn an apartment, hung with little scurvy pictures of saints; the beds are without curtains. They have only one cup in the house; and if the mule-drivers get first hold of it, which commonly happens, you must stay patiently till they have done with it, or drink out of an earthen pitcher. Though you arrive at midnight, you must send to the butcher's, the market, the tavern, the baker's—in fine, to all parts of the town—to gather wherewith to make a sorry meal. They put what you would have roasted, on tiles; and when it is well grilled on one side, they turn the other. When it is flesh, they fasten it to a string, and so let it hang on the fire, and turn it with their hands; so that the smoke makes it so black, it is disgusting to look on."*

Apparently there is now one small exception from the general rule of sending abroad for every thing:—

" The live stock—hens and chickens, '*gallinas y pollos*'—run about the whole ground-floor, picking up anything, and ready to be picked up themselves and dressed. All the operations of cookery and eating—of killing, sousing in boiling water, plucking, et cetera—all preparatory, as well as final, go on in this open kitchen."—P. 28.

In the *ventas*,

" chairs are a luxury. The lower classes sit, as in the East, on low stools, and fall to in a most oriental manner, with a frequent ignorance of forks. They substitute a short wooden or horn spoon, or 'dip' their bread into the dish, or fish up morsels with their long pointed knives. They eat copiously, but with gravity; with appetite, but no greediness. No nation, as a mass, is better bred or mannered than the lower classes of Spaniards."—P. 29.

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* Dunlop's *Mem.* ii., 400.

With respect to the moderation of the Spanish appetite, it may not be amiss to quote the remark of Lithgow, in his travels (p. 356), who takes a distinction. "The Spaniard," says he, "is of a spare diet and temperate, if at his own cost he spend; but if given gratis, he hath the longest tusks that ever played at table."

We shall not enter on the far-renowned roguery of the Spanish *venteros*, displayed in such tricks as palming stewed cat for stewed hare on their guests, or watering their wine. Nor can we dwell on the respectable list of eatables, "forming the foundation of the national cuisine," such as the stew of hare or partridges—dry salted cod-fish—"delicious hams," whose predecessors delighted the Romans—dry and highly spiced sausages—fresh black puddings—the *gazpacho*, a cooling acetous preparation of vegetables, indispensable to labourers in sultry days—or eggs, *garbanzos*, (chick-peas,) &c., the *olla* (formerly termed *olla podrida*, or *pot pourri*) a savoury stew in Andaluçia, of which the *puchero* is an insipid imitation in Castile. Even the oil and the garlic, though so copiously used, we shall scarcely touch on; and still less, if possible, on the Valencian butter, which is an article

"composed (for the cow has nothing to do with it) of equal portions of garlic and hog's lard, pounded together in a mortar, and then spread on bread, just as we do arsenic to destroy vermin. The Catalonians have a national soup, which is made of bread and garlic, equal portions, fried in oil, and then diluted in hot water. This mess is called *sopa de gato*, probably from making cats sick."—P. 28.

On the whole, the qualified remark seems to be too well-founded which Mr. Ford makes on the Asturians, that

"they are among the best cooks in Spain, or rather the least bad in this land of gastronomic Erebus, where people only eat to live, like the beasts that perish."—P. 695.

We must now, however, bring our notice of the Spanish Hand-Book to a close. In doing so, it affords some consolation, while reflecting on the great moral and social evils which afflict Spain, to perceive that so many of them are susceptible of a remedy, which ought not to be beyond ordinary reach. To clear the highways of robbers, and to open up good communications through the kingdom, seem to be achievements, the accomplishment of which may reasonably be expected at no distant time.

The removal of another fruitful source of loss and demoralization to the country—the smuggling system—would be at once accomplished, if the true mutual interests of nations were better understood, and the principles of free trade applied to international commerce. It may seem almost Utopian to anticipate such a state of things in Spain; but we are sanguine as to the influence

which will erelong be exerted upon other nations by the example of Britain, as soon as she sets herself in good earnest, and on broad principles, in the right path, by repealing her corn-laws, and abolishing her differential duties.

But the first essential element, in the social and political amelioration of Spain, will be the restoration of order and tranquillity, on such a basis as shall give a solid assurance of their permanent continuance. It is long, indeed, since a well-founded hope on this subject could be justly entertained in Spain. No ground was laid for it by the return of Ferdinand VII. at the close of the Peninsular war, to become the tool of a perfidious and sanguinary *camarilla*, and to re-establish civil and religious despotism, even at the cost of reviving the baleful Inquisition. Six years of trouble and misgovernment, involving above twenty changes of administration, and various conspiracies, at length resulted in the Revolution of 1820. But this new state of affairs, as it went the whole length of re-adopting the constitution of 1812, was highly unsatisfactory to a large portion of the Spanish nation. Intestine discord and conflict followed, in which powerful opposing interests were so much balanced, that, not improbably, if left to themselves, mutual concessions might have been found indispensable on either side, and thus a compromise might have been produced, to the great common benefit of all. But, unhappily, the independence of the kingdom was not respected, and, in an evil hour, France threw her sword into the scale. In 1823, all Spaniards who were opposed to absolute despotism, were put down by the French invading armies, under the leadership of that same Duc d'Angoulême, who was destined, so soon after, to expiate, by a life of exile, a similar assault on the liberties of his native country.

The civil wars and commotions, consequent on the death of Ferdinand and a disputed succession, have hitherto exhibited little else than a chronic state of insecurity and revolution, in which each successive triumph has contained within it the seeds of a speedy reverse. Once, indeed, there was a promise of better things for Spain, and, consequently, for Europe; a promise which was disappointed apparently, in a great degree, through the influence of foreign intervention, from the same quarter, and for the same object, as before. We allude to the regency of Espartero, who, by the confession of both friends and foes, would probably not have been overthrown either by native or foreign hostility, had he only exerted the powers at his disposal with the unscrupulous energy of a tyrant, and shown less reverence for the law and the constitution. For the wrong done to Espartero, his country is now paying the penalty, in being exposed to the unprincipled and ruthless sway of the dictator, Narvaez. But

the permanence of the dominion of Narvaez is surely as improbable as it is undesirable. Originating in crime, oppressed with financial difficulty, and supported by the power of the sword, it would require stronger aid than can be borrowed from the now emasculated Cortes, or even from a crafty but short-sighted priesthood, to assure the duration of that dominion. The friendship of the priesthood, whose demands it will be found alike impossible to satisfy or to refuse, is indeed one of the most fatal symptoms of the present order of things. And although all conspiracies, whether fomented by the Government or not, have hitherto been quenched in blood, this will not lend genuine vigour or vitality to an Administration, which nothing but its terrors can save from being as contemptible as it is hateful.

It would be somewhat bold to venture on any confident prediction as to the next phasis which will be exhibited in the political progress of Spain, considering the variety of conditions through which she has passed in modern times, and the deplorable result of each and all. But this much may be said, without the imputation of rashness; that it is difficult to see how a permanent foundation for peace and order can now be laid in Spain, until the power of the monarch be established, only co-ordinately with the liberty of the people, or at least be based on some system containing within it the germ of constitutional freedom. It may be, that the Spanish nation is not now fitted for the full enjoyment of political freedom, in the British acceptation of that term. But at all events, it appears to be, in various quarters, sufficiently leavened with a knowledge of the rights which are inherent in the people, under every form of just government, to prevent the establishment of permanent tranquillity under any political system which does not recognize the existence of these rights, and provide for the fuller development of the popular element in the legislature, in proportion as the wealth and intelligence of the people increase.

Even if Spain were suffered to become an apanage in the family of Louis-Philippe, it seems very doubtful if France could more effectually put down all liberalism there than Austria now does in Italy. And in any other contingency, there is little other prospect for Spain, so long as the very germ of constitutional freedom is denied to her, except a political condition analogous to that of Italy, in which conspiracy will succeed conspiracy, without more rest or tranquillity in the intervals between than may belong to a smouldering volcano. The price, meanwhile, which must be paid for this misgovernment whilst it endures will be wretchedness to the people within its sphere, and peril and injury to the European commonwealth without.

But so soon as order and tranquillity shall be established on a

basis, which, instead of placing king and people in a state of antagonism, as under the political relations of a despotism, shall combine them in one common interest, as under the relations of a constitutional monarchy, the gain to Spain and Europe will be not less than the removal of the existing paralysis which disables one of the most important members of the family of civilized nations. Such a return to vital prosperity seems but merited by a people who displayed the high qualities for which Spaniards were distinguished before they were subdued and destroyed by evil institutions. That heroic race, which, in former time, so nobly rolled back the tide of Saracenic victory from the Pyrenees, and, ever in the van of Christendom, bled freely to redeem their country from a foreign yoke, is worthy of a destiny far different from that to which she has now so long been doomed. Were good government once established in Spain upon a firm basis, the kingdom would be, as it were, created anew. The wounds inflicted by a long course of misgovernment would at last disappear. The national injuries resulting from the cruel expulsion of the whole people of the Jews, and from the ruthless deportation of the entire Morescoe nation—injuries which have left behind them deep traces, still visible after the lapse of centuries—would soon be obliterated and defaced, along with more modern marks of infirmity and decay, before the reviving energies of the people, eagerly aided as they would be, to develop their boundless agricultural and mineral resources, by the enterprize and activity, the machinery and capital, which would flow in from other nations, and most of all from Britain. There is, moreover, another gain which would then be realized, and which Spanish history proves to be of no mean importance. The government of the kingdom, being no longer independent of constitutional control from the people, would be obliged primarily to consult Spanish interests; and would, therefore, be restrained from lavishing the blood and treasure of Spain on foreign projects and quarrels, as has too often happened heretofore, both under the Austrian and the Bourbon dynasties, the latter of which has frequently rendered Spain a mere convenient tool to subserve for the time, the anti-British purposes of France.

These are fair anticipations to indulge, and yet their realization might be expected with confidence, were the germ of constitutional freedom to take secure root in Spain. We are unwilling to believe either in the impossibility or even the improbability of this. Again and again such a consummation has seemed on the eve of being accomplished, when the fairest hopes were crushed by the baleful intervention of foreign steel and foreign gold. But it will not always be so. Spain is destined, we trust, ere long, to resume its high place among the nations. In the mean-

time, when taking leave of the subject, we cannot but remember that a peculiar interest, in connexion with the Peninsula, must ever be cherished in Britain. The sea around her rocky coast, from age to age, from the times of Drake to those of Collingwood and Nelson, has been the field of naval victory, and a home of glory to "the flag that braved a thousand years the battle and the breeze." And in high rivalry, the land, along its plains, and streams, and mountain-passes, has been witness to British triumph, from the era of the heroic Edward the Black Prince, to that of the mournful honours of Coruña, hallowed by the ashes of Moore—and of the dazzling career of Wellington, advancing from conquest to conquest, by Talavera, and Salamanca, and Vitoria, till at length the heights of the franchised Pyrenees were crested with the victorious banners of Britain.

While recalling the modern exploits of Britain, and the scenes where so many of her heroes sleep—and while musing on those earlier days of Spain when her true sons fought and fell in many a bloody field, bravely pursuing that chivalrous career of war and victory which at length redeemed her from the Moor—might not both Spaniard and Briton now join in applying to Spain those beautiful lines in which Byron poured out his spirit over the fallen warriors of Greece?

> "The waters murmur'd of their name;
> The woods were peopled with their fame;
> The silent pillar, lone and gray,
> Claim'd kindred with their sacred clay;
> Their spirits wrapp'd the dusky mountain;
> Their memory sparkled o'er the fountain;
> The meanest rill, the mightiest river,
> Roll'd mingling with their fame for ever.
> Despite of every yoke she bears,
> That land is glory's still and theirs!"

Alas! that more cannot yet be added respecting the freedom of Spain, than these words from the same poet,

> "Oh! still her step at moments falters,
> O'er wither'd fields and ruin'd altars,
> And fain would wake, in souls too broken,
> By pointing to each glorious token."

But we trust that better days for Spain are drawing nigh. She was sunk in a state of apathy and stagnation, from which no ordinary events were fitted speedily to awake her. Even the frightful violence of which she has lately been the degraded witness, will prove to be fraught with ultimate good, if it arouse her thoroughly to the task and the duty of regeneration. The darkness at present surrounding her, though it seem that of midnight, may be but the herald of approaching dawn.

ART. VII.—*Researches into the Physical History of Mankind.* By J. C. PRICHARD, M.D. London, 1844.

Crania Americana, or History of the American Races. By SAMUEL G. MORTON, M.D. Philadelphia, 1839.

Proceedings of the Ethnographic Society, London. Athenæum, 1844–5.

THE physical history of the various races of mankind has of late begun to excite considerable attention. Indeed, the science may be said to be almost entirely of modern origin. We hear little of the subject among the ancients, for the Greeks and Romans were too apt to look upon all other nations as barbarians—they disdained to make their languages a study, and cared not to trace the origins and connexions of the tribes with whom war or commerce brought them into casual intercourse. The limited knowledge which the civilized nations of antiquity possessed of the earth's surface, and their comparatively imperfect means of extensive and rapid locomotion, were also unfavourable to speculations of this nature; the shores of the Mediterranean almost bounded their naval excursions; a march into India was an exploit not to be repeated in many centuries; and the discovery of Britain, "*toto orbe divisa*," was reckoned the utmost point of maritime exploration.

But when the skill and daring of modern navigators enabled them to circumnavigate the globe, they came upon races of men who had been so long and so completely isolated from the original stock, that the poor savages looked upon their visitors as superior beings—as divinities from another world; while these again beheld, with equal astonishment, forms and features so strange, and modes of life so singular and debasing, as to lead them to doubt, not without some show of reason, whether those beings, with so much of the human form, and yet with so much of the habits of the brute, could in reality belong to the same species as themselves.

The physical history of man, unlike that of the lower animals, assumes two distinct phases as we view him in two distinct states—as a savage, and a civilized being. In the one state, he exists in a condition nearly allied to the brutes,—is in fact an animal furnished with certain instincts and impulses by which he is guided, while reason is all but obscured; in the other, he is actuated by a reflecting mind, illuminated by a superior intelligence, and enriched by traditional knowledge and

experience. In the savage state, he roams about almost naked and houseless, and unprovided with any of the resources of art; his chief energies are bent upon the means of procuring food—and for this purpose he exercises all the habits of a carnivorous animal, joining the swiftness and perseverance of the dog and wolf to the cunning and ferocity of the lion and tiger. He is gregarious chiefly for the sake of more easily hunting down his prey; and when one tribe, so associated, encroaches the least upon the hunting-grounds of the other, fierce combats and unrelenting massacres are the consequence. He is ever on the defensive, and war against every living thing occupies his whole thoughts. In this, his most degraded state, all the worst passions are called into action, as cruelty, revenge, pride, combativeness; and these are but faintly mitigated by a few of the virtues, if we may not rather call them the instinctive impulses, of his nature. He has the common animal care of his offspring, but the fact of many savages destroying their female and deformed children, places them, we are afraid, even below the brutes in the exercise of this instinct, as the deliberate act of cannibalism sinks them to a degradation even still lower. Nor are the indications of the reasoning faculty in a great degree raised above the manifestations of animals. We speak of the lowest condition of savage life—for of it there are many grades—such as was seen among the aborigines of New Holland, who, when first discovered, had no arms but clubs of wood, no clothing whatever, lived in holes in the earth or caves of the rocks, and were destitute of even the rudest implements for catching fish or snaring their prey—whose minds were dark and gloomy, and influenced by the fear of evil agencies alone.

But when we turn to man in a civilized state, he assumes a very different aspect. His purely selfish and isolated character is laid aside, and he joins his fellowmen to form a society regulated and controlled by laws conducive to the public good. His gross animal propensities and debasing passions are moderated and subdued under the mastery of reason and the moral sense—and instead of being the slave of the elements around him, he now appears as exercising a sway and command over matter, and wielding it to his own purposes. His reasoning powers expand into full activity—his mind dwells on the experience of the past, or extends into the future, while a communicating ray of light, dim and unobtrusive, yet efficacious and highly influential, is opened up between it and the world of spirits. Thus with his two natures, he becomes a being totally different from all other animals. Myriads of these appear on the earth in successive generations, but they leave no traces of their existence behind them—they accumulate nothing to forward the attain-

ments of their respective races, while man, even from the first, has stamped his existence in the records of time. We can trace him from his earliest progress, emanating from a single family—spreading over the surface of the globe—building cities—accumulating knowledge—extending science—cultivating the face of nature—and making the wild animals of the forest retire before him.

When, after a wide separation and the lapse of many ages, the extreme points of the human race again came into contact, it was not much to be wondered at that the civilized man looked upon the savage, changed and degraded, not only in his moral but his physical aspect, as a being of a species distinct from his own, or that his pride, or his science, hesitated to acknowledge him as his brother. Indeed, the identity of the human species has formed a subject of keen discussion ever since the attention of naturalists has been directed to the matter, and the elucidation of the point in dispute still continues to exercise the ingenuity of our ablest philosophers. The result of these learned discussions is, that much more definite rules have been laid down as to what constitutes a distinct species, so that throughout both the animal and vegetable kingdom, the idea of a species is now pretty well defined. Thus

"A race of animals or plants, marked by certain peculiarities of structure, which have always been constant and undeviating, constitutes a species; while two races are considered as specifically different, if they are distinguished from each other by some peculiarities which one cannot be supposed to have acquired, or the other to have lost, through any known operation of physical causes." *

On applying this test to the different races of mankind, however varied their external features may be, there is nothing in their bodily structure or physiology which can lead us to suppose that they belong to more than one species. On the contrary, there is such a uniform resemblance of the skeleton, the same number and general shape of the bones, the same type and structure of every part of the body—the same kind of teeth—the same average duration of life—the same period of gestation, and a prolific offspring from all mixtures of races, instead of the hybrids resulting from a mixture of different species, together with all those circumstances which, in other animals, constitute an identity of species, as to leave no doubt, on physical proofs alone, irrespective of all other evidence, that mankind have sprung originally from a common source. We believe there are few

* Prichard's *Researches.*

authorities of the present day who deny the identity of species, and none who have brought forward any valid objections against it.

It must be allowed, however, that there are many very marked and striking differences of feature, and even modifications of form among nations, as well as various tints of skin, which give rise to very obvious distinctions and divisions into races. These modifications are denominated varieties, and a great deal of light has been thrown upon this subject from analogous facts, drawn from the vegetable kingdom, and from various races of the inferior animals.

Thus it has been ascertained that many species of animals, as well as plants, have a tendency to diverge into varieties, and this is particularly the case with those plants and animals which embrace the greatest range of climate in their dispersion over the earth's surface. And this pliability of their constitutions would seem to be one of those provisions which nature employs to suit them to the various soils and climates over which they range. Striking varieties of colour and shape and size are thus frequently exhibited in hogs, sheep, horses, and dogs. In a few years, and within a few generations, from a single pair, such varieties of breeds will proceed, so differing from each other as might render it matter of doubt whether they were not entirely distinct species, were not the proofs to the contrary sufficiently evident. Now the same analogies have been applied to the human race. Man has evidently been destined to people the whole earth, and it has accordingly been supposed that, by some law of his nature, aided by the influence of external circumstances, he assumes certain peculiarities of form and colour, suited to the locality in which he may be placed; or, according to another supposition, from the very earliest periods of population, certain leading varieties have spontaneously originated, and going forth into different regions of the earth, have found their appropriate climates, and have given rise to the various races which we still find distinctly marked by their original type.

It is certainly a remarkable circumstance, that at a very early period in the history of the human race, certain marked varieties of the species were in existence. We have a proof of this from a painting which was lately discovered in the ruins of Thebes, conjectured to be of the period of the eighteenth dynasty, and early in the times of the Egyptian Kings, perhaps much about the time when Abraham lived. We give the description of this curious picture in the words of Mr. Wilkinson:—

"Number 35 is by far the most curious of all the tombs in Thebes, since it throws more light on the manners and customs of the Egyptians than any hitherto discovered. In the outer chamber, on the left hand (entering), is a grand procession of Ethiopian and Asiatic chiefs,

bearing a tribute to the Egyptian monarch, Thotmes III. They are arranged in five lines. The first, or uppermost, consists of blacks and others of a red colour, from the country of Pount, who bring ivory, apes, leopards, skins, and dried fruits. Their dress is short, similar to some of the Asiatic tribes, who are represented at Medeenet Haboo. In the second line are a people of a light red hue, with long black hair descending in ringlets over their shoulders, but without beards; their dress also consists of a short apron thrown round the lower part of the body, meeting and folding over in front, and they wear sandals neatly wrought. Their presents are vases of elegant form, ornamented with flowers, necklaces, and other costly gifts, which, according to the hieroglyphics, they bring as 'chosen offerings of the chiefs of the Gentiles of Kufa.' In the third line are Ethiopians, who are styled 'Gentiles of the south.' The leaders are dressed in the Egyptian costume, the others have a girdle of skin, with the hair, as usual, outwards. They bring gold rings, and bags of precious stones, hides, apes, leopards, ebony, ivory, ostrich eggs, and plumes, a camelopard, and hounds with handsome collars, and a drove of long-horned oxen. The fourth line is composed of men of a white nation, clad in long white garments, with a blue border, tied at the neck, and ornamented with a cross or other devices. On their head is either a close cap or their natural hair short, and of a red colour, and they have a small beard. Some bring long gloves, which, with their close sleeves, indicate, as well as their colour, that they are the inhabitants of a cold climate. Among other offerings are vases, similar to those of the Kufa, a chariot and horses, a bear, elephant, and ivory. Their name is Rot-u-no, which reminds us of the Rotheni of Arabia Petrea; but the style of their dress, and the nature of their offerings, require them to have come from a richer and more civilized country—probably much farther to the north. In the fifth line, Egyptians lead the van, and are followed by women of Ethiopia, 'the Gentiles of the south' carrying their children in a pannier suspended from their head. Behind these are the wives of the Rot-u-no, who are dressed in long robes, divided into three sets of ample flounces. The offerings being placed in the presence of the monarch, who is seated on his throne at the upper part of the picture, an inventory is taken of them by the Egyptian scribes. Those opposite the upper line consist of baskets of dried fruits, gold rings, and two obelisks, probably of artificial composition. On the second line are ingots and rings of silver, gold and silver vases of very elegant form, and several heads of animals of the same metals. On the third are ostrich eggs and feathers, ebony, precious stones, and rings of gold, an ape, several silver cups, ivory, leopard skins, ingots, and rings of gold, sealed bags of precious stones, and other objects; and on the fourth line are gold and silver rings, vases of the same metals and of porcelain, with rare woods, and various other rich presents."*

That peculiar varieties of feature may spring up and prevail,

* Wilkinson's *Ancient Egyptians*, pp. 151-4.

and thus a natural cast of countenance be through time established, is a circumstance which few can hesitate to believe, and of which every one may satisfy himself simply by looking around him and marking the various forms and shades of feature which become hereditary in certain families and provinces, extending, with still more marked differences, to nations. Thus the features of the Scotch, long and angular, with prominent cheek bones, differ considerably from the round smooth faces of the English, and these again from the Irish, German, and French. The Spaniard differs no less from the Italian, and so with regard to the rest of Europe. If the features are thus found diversified, why need we be surprised that the form and shape of the skull should also vary, and thus that the angular and pointed cranium of the Mongol, and the retreating forehead and projecting jaws of the Negro, should originate from the same law of variation in the animal economy? But the colour of the skin is a distinction so marked and extraordinary as not to be so easily accounted for; and many who are readily disposed to admit that varieties of features, and even of form in the cranium, may not be enough to constitute a specific difference, yet cannot be reconciled to the idea, that the swarthy negro and the white European could, by any possibility, have sprung from the same parent stock.

Yet, among naturalists, colour merely is not, by any means, reckoned sufficient to constitute a specific difference. We have animals of the same species assuming all shades of colour—and this is particularly the case with animals in a state of domestication. It is no unusual thing for a ewe to produce, at the same birth, a black and a white lamb; and in a single litter of dogs or rabbits, the same diversity of colour prevails. Changes from black to white vary with almost every successive generation, although, with animals in the state of nature, hereditary colour is much more permanent, and varieties occur at much longer intervals. In man, the peculiar hereditary colour, when once attained, would, on a cursory view, appear to remain indefinitely permanent; but we shall presently see that this is not an invariable rule.

It was formerly a prevailing opinion among physiologists, that in the Negro a particular tissue existed between the external and internal skin, called the mucous net-work, by which was secreted the peculiar colouring matter of the race. According to Fourier, the existence of this organ in the Negro, while it was not to be found in the white man, constituted the former a distinct species. More careful investigation, however, has demonstrated that no such exclusive organ exists, and that the dark colour of the Negro is due to the secretion of a black pigment in the lower part of the common cellular tissue of the outer skin, while, in the

European, the same cellular tissue is filled with a whitish matter. In the intermediate coloured races, this fluid assumes various tints, and is, in fact, of the same nature as that which gives colour to the various shades of the hair and eyes.

If, then—from the general structure of the body, the various modifications of form in the skull, and even from the diversities of colour—there be no valid ground for establishing a specific difference between the various races of men, but, on the contrary, strong reasons for assuming the theory, that they all had a common origin—the only question for discussion is—Under what peculiar circumstances the existing varieties of mankind had their origin? This is an interesting, but it must be allowed, a very puzzling question. Two views of the subject present themselves: —Either that, at a very early period of society, certain varieties at once sprung up, and going forth over the surface of the earth, made choice of those regions best suited to their constitutions—in other words, that although several species of men were not directly created, yet, that certain varieties, destined to be permanent, sprung out of the parent stock, and have continued distinct till the present times; or, on the other hand, that man, like many of the inferior animals, was created with a constitution predisposed to pass into various modifications, according as he was subjected to the influence of external and adventitious causes—the chief modifying causes being climate, local situation, habits of life, and similar influences.

In support of the latter view, there are many facts which are generally adduced. Thus, the modifying effects of locality and climate are abundantly evident.

In speculating upon climate as the predisposing cause of the difference of colour, one most remarkable fact at once presents itself to our observation—that the tint of the skin varies according to the latitude or the distance from the equator where the influence of the sun is most powerful. Thus, with very few exceptions, which can be tolerably well accounted for, the nations with the darkest hue of skin inhabit the torrid zone. A lighter tawny shade is found prevailing in the hotter parts of the temperate regions; gradually the tint becomes less as we approach the frigid zones, till at last the ruddy fair countenance and light hair is found to prevail. Thus among the nations of Europe, who have undoubtedly had one common origin, we find this gradation of colour. In the south, in Spain and Portugal, the hair and skin are dark; in France and Germany, the hue becomes lighter; while in Denmark and Norway, light hair, blue eyes, and a fair complexion, universally prevail. The greater part of Africa is peopled by numerous tribes of the Negro race, whose habits, features, and general aspect, all bespeak them to be of

the same origin; yet we find various shades of colour. Thus, in the tropical parts of that continent, the skin is of a jet black; in the mountainous regions of the Atlas chain, where altitude of situation has a similar influence as difference of latitude, several tribes are of a lighter tint; and, in the southern parts of the same continent, where a temperate climate prevails, the colour of the Hottentots and Caffres is of a light reddish hue, and the general aspect not unlike that of the Chinese or American Indians.* We find the same on the American continent: the natives of California, within the tropics, are as black as the Negro, while the inhabitants of the colder regions to the south and north assume a much lighter hue.

Among the North American Indians, it is not unusual to meet with reddish hair and blue eyes, with skins but slightly tinged.† The effects of civilization are also remarkable as tending to moderate the influence of climate. It has been noticed that the Turkish and Asiatic ladies of rank, who are confined to the house, have much fairer skins than the men, who are daily exposed to the influence of the sun; and in many countries where a black population prevails, the common people are of a deeper hue than the higher ranks,—indeed, the more rude and savage the nation, the deeper generally is the tinge of the skin, and the more marked and characteristic are their features. It must be allowed, however, that some exceptions to these general facts are observable: in some tropical countries we find races less dark than those in higher latitudes, and some again, as the Esquimaux and Canadian Indians, who preserve their dark skins even within the arctic circles. These anomalies can only be accounted for by reflecting that savage tribes are continually changing their residences, making sudden and long migrations; and that, if the colour of the human skin can be changed and modified by climate, this can only be supposed to take place after the lapse of many ages of permanent residence in situations favourable to such changes. The same reply is applicable to the objections to the influence of climate, made by those who affirm that Europeans, who have long resided, or may have been born, in tropical countries, are in nowise changed in colour or features even in the lapse of several generations. In considering objections of this nature, it must be always borne in mind that many centuries would probably be necessary to impress any permanent alteration on the constitution; that this influence is most likely to take effect on savage man, who is exposed completely to its

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* Barrow's *Voyage to China.*

† Lewis, and Clarke, and James's *Travels in the Rocky Mountains.*

operations; and that no proper or decisive illustration of the circumstance can be drawn from colonies of civilized men going forth to any region of the globe, protected as they are by all the accessories of art against the influence of the elements. Thus, the acclimation of man would appear to be a slow and gradual process; and when, at last, distinctive varieties were produced, these continued to preserve a very permanent character. Peculiar varieties thus formed became suited also to particular climates. Thus, while the native of the north finds almost a certain grave in the torrid deserts of Africa, the Negro droops and languishes in a frigid clime.

Such are the views which are generally entertained by those who base their speculations on the analogies afforded by the example of the lower animals, and of the economy of vegetable productions, joined to the actual facts which the observation of the various races of men present to us; and, on the whole, we think it cannot be denied that climate, and other external circumstances, exercise a modifying influence on all races of men, to a certain extent. But whether these influences are the sole cause of varieties, is a proposition not so easily determined. In favour of the first hypothesis which we have propounded—that certain leading varieties may have at once originated in the early periods of society, and gone forth the propagators of distinct races which still remain permanent—there are not wanting some striking facts, and not a few plausible conjectures. Thus, from the earliest periods of the history of man, we can trace certain distinct races who have subsequently extended over the earth and peopled its surface; but they have done so without intermingling. Successive streams or waves of population, have flowed out, as it were, from central sources, but these currents have observed a distinct and unmingled tract. One great stream—the Caucasian race—proceeded from north-western Asia, peopling Greece, Italy, and the whole of Europe. Successive inroads of new swarms came one after the other; but still it was the same people from the same stock, varying somewhat in their physical structure, impressed by the modifying influences of external circumstances, but still the same in mental and bodily energy, imbued with the same feelings, and using the same radical language. Another great wave of population flowed on over Eastern Asia—a peculiar people, strongly and permanently marked—branching out into great nations, and spreading far and wide, yet still retaining all those characteristics of mind and body which constitute the great Mongolian race of the human family. We need not particularize the Ethiopian branch—the woolly-haired Negro—so well marked and distinct as to physical character, and no less isolated by locality than by destiny, from the other races of man-

kind. How strange that all these races, with their wandering propensities, should never have amalgamated—that they should have frequently met, and, in many instances, even been neighbours for thousands of years, and yet never to any extent commingled! We have repeated instances in the records of history, of a horde or colony coming into the country of another, and there settling down and becoming as one nation; but these were instances of different portions of the same original race commingling together. We have no authentic account of Mongolians to any extent coalescing with Negroes, or either of these with the Caucasian family. The alleged exception of the Turks being a mixed breed between the Mongol and the Circassian and Georgian races, is by no means ascertained; nor have we yet any accurate facts regarding the so-called mixed races of Northern Africa. Neither in the whole Mongolian range of inhabited territory, which includes a considerable portion of the torrid zone, do we find any decided race with the Negro characteristics—though here, climate undoubtedly exercises a certain influence in imparting a deeper tinge in the skin, and other modifications on the well marked but still permanent Mongolian type. Nay, so far from permanently amalgamating, there is reason to infer that when a colony of one of these distinct and primary races invades the country of another race, the weaker party gradually becomes extinct under the superior influence of the other. An illustration of this nature is now in progress among the Indian tribes of North America; and in New Holland the extirpation of the aborigines is wellnigh consummated. These are a few of the facts and reasonings which have suggested themselves to our mind in the consideration of this subject. Without excluding altogether the modifying effects of climate and other external circumstances, but without going the length of assigning the whole effects to these circumstances, we think the facts just stated compel us to look for some other cause, not perhaps altogether independent of, but co-operating with, external influences. But to determine this question, we are not yet sufficiently acquainted with the laws which regulate even the analogous cases of varieties in the animal and vegetable kingdoms, still less with those which may influence the human economy; perhaps, too, the same general laws which apply to the rest of organic nature may be special or modified in the case of man, where not only his physical but his moral destiny is concerned. In the case of other organized beings, varieties are not indefinitely permanent, for their offspring have always a tendency to return again to their original type. Now the peculiarity of man is, that at an early period of the existence

of the post-diluvian population of the globe, a certain number of leading varieties appear to have sprung up and remained permanent, that is, the radical races suffer no material change, though sub-varieties are continually appearing among the individual races which have not the same permanency, but seem evidently influenced by external circumstances.

In the various races of men, the only part of the body which exhibits any marked diversity of form is the head, for the slight variety in the bones of the leg in the negro is of little importance, nor is the difference of stature or other incidental circumstances of any consequence. The form and size of the head, and the cast of the features, vary exceedingly, so that almost every tribe and nation have a peculiar physiognomy. Three permanent varieties, however, are very remarkable, and have been well characterized by Blumenbach,* under the denominations of the Caucasian or white race, the Mongolian or tawny, and the Ethiopian or black. As these varieties appear to have been of very early origin, and still continue permanent in large masses of the human family, they may not inaptly be styled primary. They are thus accurately characterized by Blumenbach :—

In the Caucasian variety, the head is almost round, and of the most symmetrical form, the cheek bones are rather narrow, without any undue projection, the jaws are well rounded, the front teeth of each being placed perpendicularly. The face is of an oval shape, straight, and the features moderately prominent, the forehead is arched, the nose narrow, slightly arched, or at least with the bridge somewhat convex, the mouth is small, with the lips slightly turned out, especially the lower one, and the outlines gracefully waved, the chin is full and round, the colour of the skin is fair and ruddy, or various shades of brown, the hair is long, smooth, and of various shades.

In the Mongolian variety, the head is almost square, the cheek bones project outwards, the nose is flat, and in the same level with the cheek bones, the arch of the eyebrow is scarcely perceptible, the nostrils are narrow, the edge of the jaw is slightly rounded forwards, the chin is somewhat prominent. The face is broad and flattened, without any distinguishing depressions, the space between the eyes is flat and very broad, the nose is flat, the cheeks round and projecting. The line of the outer eyelids extends towards the temples, while the internal angle is depressed towards the nose, and the upper eyelid at this point is continued into the under lid by a rounded sweep, the eyes thus appear placed obliquely. The colour of the skin is a reddish

* *Decades Craniorum.*

brown, or a lemon yellow; the hair on the chin is scanty, that on the head black and long.

In the Ethiopian, or Negro variety, the head is narrow and elongated, compressed at the sides, the forehead very convex and vaulted, the cheek bones project forwards, the nostrils are wide, the bridge of the nose small and flat, the jaws are much lengthened, the edges narrow and elliptical, the front teeth of the upper jaw are turned obliquely forwards, the lower jaw is strong and large, the whole skull is in general thick and heavy. The face is narrow, and projects greatly in the lower part, the eyes are prominent, the nose spreads out flat, so as to be almost confounded with the cheeks, the lips, particularly the upper one, are very thick, the jaws are prominent, and the chin is retracted. The hair of the head is short, crisp, and curly; the colour of the skin is jet black, varying to brown and reddish hues. Blumenbach has added two other varieties, the American and Malay, as intermediate between those described, and Dr. Prichard seems disposed to separate the Ethiopian variety into three,—the Negro of Central Africa, the Hottentot, and the Papuas of the South Sea Islands.*

We shall now attempt to exhibit a tabular view of the leading races of the great human family, with the localities which they occupy on the earth's surface.

Caucasian.			Ethiopian.	Mongolian.	
Indo-European.		Syrian, or Semitic.			
Europe.	Central Asia.	Western Asia.	Africa.	Eastern Asia.	America.
Pelasgi—*Greeks.* Umbri—*Latins.* Etruscans, Sclavonians—*Russians, Poles, Bohemians.* Teutones—*Saxons, Goths, Scandinavians.* Celts—*Iberians. Gauls, Belgæ, Britons.*	Medes. Persians. Kurds. Affghans. Hindoos. Paharias. Cingalese.	Chaldeans. Babylonians. Syrians. Hebrews. Arabs. Hebrew-African?—*Phœnicians, Egyptians, Ethiopians, Copts, Berbers.*	Yoloffs. Mandingos. Felatahs, (and numerous tribes of Central Africa.) Shangallas, (Abyssinia.) Kaffres. Hottentots. Papuas, (Polynesia.)	Samoides. Finns. Laplanders. Kamchadales. Esquimaux. Mongols. Tartars. Indo-Chinese. Chinese. Siamese. Japanese. Koreans.	N. American Tribes. Californians. Mexicans. Peruvians. Brazilians. Patagonians. Caribs. S. Sea Islands. Malays. Polynesians. N. Hollanders.

If we take the population of the whole world at about nine hundred millions, the probable numbers of the respective divi-

* Prichard's *Researches*, 3d Edition.

sions in the above table will be—Caucasians, 407 millions; Ethiopians, 70 millions; Mongolians, 420 millions; Americans and Polynesians, 17 millions.

Under the Caucasian division there are two branches;—the Indo-European consisting of two races, a European and Asiatic, supposed to have originally sprung from the same source, not on account of their similarity as to physical appearance alone, but from the identity of language, the radical foundation of which is the Sanscrit, from whence have sprung the Greek, Latin, Saxon, Sclavonic, and Celtic tongues. On this supposition of the identity of the races, for which there are the strongest probabilities, the effect of a tropical sun on the colour of the Hindoo skin is remarkably evident. The features of the face, and the form of the skull of the Hindoo race, are, however, strictly after the European type. The Syrian or Semitic branch again are distinguished chiefly by their languages, which are founded on the Hebrew and Syriac. The names of some of the ancient races are here, for the sake of connecting the series, included with the existing nations into which they are now blended. Considerable doubt arises with regard to the origin of the ancient Egyptian races, as well as of those of Nubia and Abyssinia. In the north of Africa the descendants of the ancient Lybian race are supposed to have their locality.

The Ethiopian division is, on the whole, a well marked one. It is confined to the central and southern portions of the vast continent of Africa. Supposing that the stream of population came originally from the north of Asia, we are left to conjecture alone, to imagine the route of the Negro race,—whether they descended through the deserts of Arabia, and entered Africa on the east,—or entered on the west, by the mouths of the Nile. No clue to the solution of these questions is afforded by languages, for these differ exceedingly among themselves, and have little affinity with other characteristic tongues. It has been found that the more savage the tribes of any country, the more diversified their languages become. And this may readily be supposed, considering that the isolation of savage tribes is very complete, and that when thus separated, new scenes and objects, and new pursuits, readily suggest to each tribe new and peculiar names and words to designate them. The tint of the skin of the Negro varies from a deep black to a red and tawny yellow. Towards the north of Africa, according to the accounts of travellers, there is sometimes an approach to an admixture of races, indicated by certain tribes in those localities having long straight hair, and features not exactly of Negro character. It is remarkable, however, that on the whole, other races keep distinct from

the true Negroes, and in those exceptions where a mixed breed occurs, such are generally short-lived.*

The Papua race of New Guinea and other islands of the South Sea, partake of the character of the African negro, and by some are supposed to have emigrated thither from Madagascar. They form distinct and separate races in many of those Polynesian islands, where are also found races of the Malay tribe.

The Mongolian division extends over a large portion of the habitable globe, and comprehends numerous races, and considerable diversity of languages.

Towards the extreme north-east of Asia, considerable confusion of races exists, so that some doubts arise regarding their classification under this division. Of this nature are the Finnish and Lapland races.

The American Continent is peopled by numerous tribes, which, though they vary considerably in the form of the skull, and somewhat in the colour of the skin and contour of the features, as well as in diversity of language, yet have, on the whole, such characters in common as lead to the supposition that they are all of one original stock. From whence this stock came is, however, a matter of great uncertainty. Some have supposed the tide of population to have flowed from the north, and hence that America was first peopled from the north-east of Asia. Some Mexican traditions to this effect are still prevalent. Others, again, have imagined Mexico and Central America the first focus of population, from whence, as from a common centre, the various tribes have issued, north and south. This is certainly more agreeable to the analogy of other migrations, where we find that men have gone forth from a centre of comparative civilization, and have gradually degenerated more and more to the extreme savage state, as they receded from this centre. We have ranged the Americans under the Mongolian division, as their structure and general characteristics more nearly resemble the Mongol than the other races. Morton, however, claims for the Americans the character of a distinct and peculiar race.† On the supposition that Central America was the first focus of population, the origin of the race has been traced from the central latitudes of Asia. Though the connexion of language between the inhabitants of the New and the Old World be very faint and imperfect, yet certain traditions and customs, especially a distinct tradition of the deluge, and of

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* Mollien's *Voyages*.

† Crania Americana, and Edinburgh Philosophical Journal. 1845.

the first origin of man from a single pair, prevalent among the American tribes, unequivocally point to a remote period when they formed a portion of the great human family. The late discoveries of ancient cities in Central America, with numerous figures in the form of hieroglyphics, add much interest to, and are, perhaps, likely in the end to throw much light on, the history of this singular people. One fact, however, seems apparent, that no records of a very remote antiquity are to be found throughout the American Continent; and the absence of such would lead to the conclusion that it has been peopled at a comparatively recent era.

The origin of the Polynesian nations is as inexplicable as that of the Americans. They have, on the whole, more of the Caucasian than the Mongolian character; and their aptitude for civilization, as well as the cast of their mental characters, would strongly favour the idea of their descent from a Caucasian race. The question at one time started regarding the extreme isolation of these islands, and the consequent difficulties of their supposed population from such distant countries as any in the Old World, have now been completely set at rest by many well-authenticated instances of canoes and boats making voyages, or having been drifted by tempests, to almost incredible distances.

In tracing up the origin of nations and the dispersion of the human race, where we have but obscure traditions and dim and scattered facts to guide us, we are, at the very outset, singularly reminded that it is only from a limited era of the actual existence of the great human family that our researches can commence. The antidiluvian period extended from sixteen hundred to two thousand years*—that is, one-third of the entire duration of the world since it was first tenanted by man. In that period, millions of beings must have existed—nations and dynasties must have flourished—cities were built and arts prevailed—events sufficient to have filled huge libraries with their history must have happened; and it must have taken volumes to have recorded their civil polity and warfares,—yet all that we know of them is contained in a few pages of the Book of Genesis, where a few heads of families merely are mentioned to deduce the genealogy of Noah from Adam. The antidiluvian population at the time of the deluge, supposing that the rate of increase was, on an average, similar to that immediately succeeding that event, must have equalled the population of the world at the birth of Christ. The duration of the period was nearly the same; and, though

* The Hebrew computation makes the antidiluvian period 1656 years; the Septuagint version, 2262 years.

there was only one progenitor—Adam—in the first era, and Noah and his three sons in the latter, yet this difference at the commencement of a series is but of very small moment; and it is here unnecessary to speculate on the prolonged duration of life, as stated of the antidiluvians—a circumstance calculated to increase population at a very great rate. It is unreasonable to suppose that the primeval population was confined to some extensive valley, some extended country, or even to a single continent. They, no doubt, like the post-diluvians, went forth and peopled the earth, founding great nations, and erecting many monuments of human art; yet not a trace of all these is to be seen—not a mound or a brick, or a lettered obelisk, or even a scratch on a durable rock, which can be called antidiluvian. No mines or quarries of the earth, no workings above ground or below, not a tomb or a tumulus, not even a bone of our remote progenitors, has ever yet met the astonished gaze of inquisitive mortals; yet tradition is full of the event of their existence, and the awful catastrophe of their destruction, even in the remotest corners of the earth, and among the rudest savages, who, separated thousands of years ago from the central focus, still retain these traditions in their memories, and mould them into their religious observances.* No fact can be better established than the destruction of a primeval race by the deluge. Profane history has repeated allusions to it,† sacred history confirms it; and, tracing up the very earliest known works of human art, we find that the foundations of Babel and Nineveh are laid upon strata which geology explains to us were but the ruins of a pre-existing condition of the earth's surface.‡ The probable cause of this singular oblivion into which the antidiluvian race and their monuments have sunk, it is not our present purpose to inquire into. We return to trace the progress of the descendants of Noah.

Taking for granted that the country around Mount Caucasus was the original cradle of the Noachian race, or, at all events, that the north of Asia was the centre from whence population originally flowed, it is curious to trace the progress of the different streams of human emigration. It is natural to suppose that the same impulses which prompt men to emigrate existed then as now—the necessity of enlarging the sphere of subsistence as numbers increase—the feuds and factions of society, and the restless wandering propensities of individuals. These early and partial separations would be gradually increased by the nature of countries,

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* HARCOURT *on the Deluge.*

† Berosus mentions the city of Enos, Noah and the ark. Diodorus Siculus alludes to Adam, and traces up history to the era of the deluge.

‡ AINSWORTH'S *Geological Sketch of Babylonia.*

the intervention of seas and mountains, the modifications of languages and customs, wars, convulsions of the earth, tempests, shipwrecks, and various other casualties.

That there has been from the first a central point of civilization and intelligence, where the arts of life prevailed, and where knowledge and experience were accumulated, is evident from the history of the human race. This centre of civilization has always existed; and though, in the course of time, it has moved onwards and changed its locality, still the accumulated acquirements of ages have been somewhere treasured and transmitted from one generation to another. But it fared differently with those tribes who wandered forth beyond the pale of civilization. They, instead of accumulating knowledge, gradually allowed what they possessed to slip away. Any offset from these became more and more ignorant, till at last the remote tribes sunk into the lowest state of barbarism. That this process of progressive degeneration actually took place we have every reason to believe, because, in tracing the descent of races and their progress from the centre of large communities, we invariably find the descendants in a lower scale of civilization than those from whom they sprung. Thus the Mexicans and Peruvians lived in cities amid all the arts of life, while the Patagonians, at the extreme verge of the continent, roamed the woods as wretched savages. The tide of population in Africa evidently appears to have extended from north to south; we accordingly find, at the extremity of that continent, the most degraded of human beings—the Kaffres and the Bechuanas, the latter as ferocious and ignorant as the beasts of the forest, with intellects so grovelling as not to possess an idea beyond the clods of earth before them, destitute of the slightest notions of any kind of higher intelligence, and even wanting in their language a word to express a God or Spirit.*

These are remarkable circumstances in the history of the human race. They afford a decided refutation of the visionary dreams of those who expatiate on the virtues of savages, or who suppose that, independent of extrinsic aid, a nation can rise from this condition into a state of civilization.

But, independent of adventitious circumstances, there appears to have been a destiny which presided over the early distribution of mankind. Thus, while one race passed calmly through the fertile plains of middle Asia, and another struck westward into the isles and countries of Europe, a third, bold and restless, and hardy as the arid and elevated steppes over which they clambered, scattered themselves along the whole north-eastern portion of Asia. While the Ethiopian took to the torrid sahaaras and broil-

* Moffat's *Missionary Scenes and Labours in Southern Africa.*—1842.

ing sun of Africa, there to be melted down and enfeebled by the climate, the white man's destiny led him to the varied, and often severe sky of Europe, there to be disciplined by the elements, and his enterprize and ingenuity to be sharpened and tried by difficulties. Between the Mongol race and the country over which they spread, there seems to have been a close affinity.

"If," says Dr. Prichard, "physical circumstances, climate, and local situation, giving rise, as they do, to a remarkable peculiarity in all the other productions of nature, have ever power to call forth those variations to which our species is prone, we should expect to find some proofs of this influence in the region so remarkably constituted, which appears to have been the cradle, and, for many ages, the dwelling place of all these nations. The north of Asia differs not more widely from Europe, in respect to the moral character and the social state of the nations found in it, than in the natural productions of the soil; and the difference is still greater when we advert to the great central steppe, the highest region of the world, where dry and cold plains of vast extent are covered only with saline plants, and with animals endued with a habit and structure fitting them for the local circumstances under which they are destined to exist."

Fierce, hardy, warlike, and restless, they roamed as hunters or nomadic shepherds, the dread and terror of the peaceful nations around; but even when they descended into the fertile plains, built cities, and applied themselves to the arts of civilized life, still their peculiar character did not forsake them. Amid the fertile empire of China, and the beautiful islands of the Chinese seas, congregated in vast cities and very ancient communities, they still remained a cold, exclusive, distrustful, and calculating people. At a very early period they reached a certain pitch of civilization, in all that regards the physical arts of life, but here they have ever remained stationary—their thoughts have never soared above the level of animal existence, ignorant in science, commonplace in philosophy, dull in imagination, low in morals, selfish in feeling, and cold to an extreme in their idolatrous theology; without energy of thought or action, they live the dull round of stagnant existence.

The Negro race again—the sable children of the torrid zone—seem formed to bask in the utmost ardour of the tropic sun. In regions where other beings only pant and die, they enjoy the full relish of life. Their black skin, full of innumerable pores, is the best medium for radiating heat and exhaling moisture; transported into any region where the tropic sun bears sway, they thrive and multiply, but in colder countries they languish and die. Over the vast regions of Africa they swarm in unknown numbers. A light cheerful disposition, patience of fatigue, fidelity, and gentleness of manners, form their characteristic dis-

position, when not debased by the ferocity of unmitigated savage life. But they have ever existed as scattered tribes, without wisdom to combine into regular and permanent communities, or energy to undertake any great or comprehensive system of civilization. Even the simple arts of life are to them almost unknown. They have little or no agriculture. They have done nothing in architecture. Navigation is to them unknown, beyond their creeks and bays. They have no literature, and, with innumerable dialects, they have no standard language. Their minds are low and grovelling, deformed by the belief of a demonaical theology, or, in many cases, devoid even of the idea of a God or a spiritual existence.

How different is the aspect, when we turn to the Caucasian stream of population, and contemplate its varied and eventful progress! Can climate and locality here have been the all-presiding influences? There is no doubt but some of the fairest portions of the earth fell to the lot of this people. The rich plains and genial skies of western Asia, and the varied borders of that most celebrated of all inland seas—the long-extended Mediterranean, whose placid waters and numerous bays have afforded greater facilities for the extension of population, and the transport of merchandize, than any other locality on the face of the globe,—these were all favourable circumstances. But "the cloud by day and the pillar of fire by night" have also all along accompanied this favoured race. We have seen, from the examples of the other races, that man, if left to his own resources, soon comes to a pause in his career, or more frequently goes on in the progress of degeneration, until he arrives at a level with the beasts of the field around him. It is only when illumined by a light from heaven that the mind of man expands into its full energies. The natural impulses of powerful intellect, bold fancy, energetic purpose, and high and aspiring achievements, will carry him onwards in the career of improvement; but unless they are guided and encouraged, and directed to nobler aims and higher aspirations, than it would ever enter into the heart of man to conceive, all would finally crumble into dust, and pass away into baseless visions. Every thing that we can call great and beautiful and fair and humanizing on earth, has been achieved by this favoured family of mankind. Who has scanned the firmament and dived into the immensity of space, unravelling the intricate laws which uphold the planetary orbs, imparting to our minds wonderful conceptions of the starry host of heaven? Who fearlessly launched the strong-built bark to circumnavigate the globe, and made us acquainted with every nation, kindred, and tongue? Who has explored the wonders of the earth, the sea, and air, and detailed the curious history and mechanism of the innumerable forms with which the elements teem? Who has dived into the mysteries of

thought, and explained the operations of the impalpable mind? Who has sung us songs to elevate the soul and raise the feelings above the gross realities of earth? Who has caught the images of external beauty and fixed them for our admiration on glowing canvass, or moulded them in durable marble? Who has raised our monumental domes and temples in which the living and true God receives unpolluted worship? All have been the achievements of the white man, under the guidance of Providence. Yet, in a population exceeding nine hundred millions, the proportion of this race, even at the present time, does not nearly amount to one-half. It is singular to think to what a partial spot of earth, and to what a handful of human beings, the first seeds of sacred knowledge were confided, and with what rapid pace the tide of emigration must, in the meantime, have been flowing over the dark and unknown regions of the earth, peopling them with beings who were sinking, as rapidly as their numbers multiplied, into the lowest stages of barbarism. After the introduction of a more perfect and distinct revelation, it is no less singular to think of the many centuries of ignorance and turbulence and crime, ere the benign influence of its precepts, and the renovating and spiritual nature of its doctrines, began to operate to any extent on the human race. We can only account for such circumstances by reflecting that a few centuries, or even thousands of years, are as a day compared to infinitude, and that such periods, long and dreary as they may appear to the eye of the isolated and fugitive mortal, are not a single hour longer than what was requisite to consummate the mighty schemes of Omnipotence!

"Go forth and replenish the earth," was the mandate both of nature; and of God and in nothing may we view the all-comprehensive arrangements of the Deity more strikingly illustrated than here—that the knowledge imparted from heaven to man should, for a season, be fostered and accumulated in particular regions, and among certain communities, from whence, in due time, a reflux action should commence, and this illuminating knowledge should go forth into the darker regions of the earth, and visit the countless wanderers from the parent stock, who roam in ignorance, not only of the common arts of life, but even of that Being who formed the earth on which they dwell, and of those high destinies for which man was called into existence! The expression of that zealous missionary Campbell, that the poor African looked on the sun with the eye of an ox, is no less true than touching; and who can read without emotion the following account of the southern tribes of Africa, as given by another missionary, in a passage to which we have already alluded. Mr. Moffat says of the Bushmen of South Africa:—

"It is impossible to look at some of their domiciles without the inquiry involuntarily arising in the mind—are these the abodes of human

beings? In a bushy country they will form a hollow in a central position, and bring the branches together over the head. Here the man, his wife, and probably a child or two, lie huddled in a heap on a little grass in a hollow spot, not larger than an ostrich; but when bushes are scarce they form a hollow under the edge of a rock, covering it partially with reeds or grass, and they are often to be found in fissures and caves of the mountains. When they have abundance of meat they do nothing but gorge and sleep, dance and sing, till their stock is exhausted. But hunger soon again drives them to the chase."

These beings had no ideas of anything beyond this world. Several interrogated by the missionaries Schmelin, Campbell, and Moffat, declared that they had no idea whatever of a God or Devil, or any Spirit, of a future state, or immortality of the soul, and yet they had in general acute intellects and excellent memories. Africaner, a chief of the Bechuana nation, after conversion became a sincere believer and deep thinker. Being asked what his views of God were before he enjoyed the benefit of Christian instruction, he replied, that he never thought any thing of these subjects, that he thought about nothing but his cattle. He admitted that he had heard of a God (from Christian colonists), but he stated that his views of Deity were so erroneous that the name suggested no more to his mind than something that might be found in the form of an insect, or in the lid of a snuff-box. Dr. Vanderkemp says of the Kaffres:—"If by religion we mean reverence for God, or the external action by which that reverence is expressed, I never could perceive that they had any religion or any idea of the existence of a God. They have no word in their language to express the idea of the Deity." They worship nothing in heaven or earth, and no fragments or ruins remain that could indicate that the fathers knew anything beyond their descendants.

Questions as to a superintending Providence being put to Africaner, whose memory was tenacious as his judgment was now enlightened, he answered,

"We had no idea that an unseen eye saw us, or that an unseen ear heard us. What could we know beyond ourselves or of another world, before life and immortality were brought to us by the word of God." This declaration was followed by a flood of tears, while he added, "You found us beasts, and not men."

After Africaner's mind was irradiated by the revelation of the Sacred Volume, however, Mr. Moffat thus states the remarkable impulse given to his active intellect:—

"Often have I seen him under the shadow of a great rock, nearly the livelong day, eagerly perusing the pages of Divine inspiration, or in his hut he would sit unconscious of the affairs of a family around, or of the entrance of a stranger, with his eye gazing on the blessed

book, and his mind wrapped up in things divine. Many were the nights he sat with me, on a great stone at the door of my habitation, conversing with me till the dawn of another day, on creation, providence, redemption, and the glories of the heavenly world. He did not confine his expanding mind to the volume of revelation, though experience had taught him that it contained heights and depths and lengths and breadths which no man comprehends. He was led to look upon the book of nature; and he would regard the heavenly orbs with an inquiring look, cast his eye on the earth beneath his tread, and, regarding both as displays of creative power and intelligence, would inquire about endless space and infinite duration. I have often been amused," adds Mr. Moffat, "when sitting with him and others, who wished to hear his questions answered, and descriptions given of the majesty, extent, and number of the works of God—he would at last rub his hands on his head, exclaiming, 'I have heard enough; I feel as if my head was too small, and as if it would swell with these great subjects.'"

There is a suggestion made by Sir Humphry Davy,* that the original dispersion of the human race, and its division into several marked varieties, may be so far beneficial to mankind, simply by affording a means of the subsequent admixture of races. In this way the degenerating effects of too close intermarriages may be prevented, and the excess of any marked peculiarities descending to and accumulating in particular offsprings may be interrupted. Besides, he supposes that refinement and civilization may be carried too far, so as to produce too great an excitability of constitution, and an effeminacy and corruption of habits and morals,—but an intermixture with a barbarous race again restores the equilibrium. The past history of the world has certainly so far confirmed the latter supposition. The history of nations hitherto has been a gradual advance to the extreme point of intelligence, refinement and luxury, then a gradual decay, till at last they have been overrun and subdued by some more savage but more powerful tribe, which has ultimately become incorporated with the conquered. But this intermixture, as has been already remarked, appears to have been confined to the various tribes and subdivisions of each particular race; there has been no general or permanent amalgamation, and nothing can prove this more completely than the fact that the great primary varieties remain distinct and separate to the present day. Undoubtedly, however, admixtures of the same primary races, in various stages of civilization, have frequently taken place, and thus it has been supposed that the repeated amalgamation of different tribes of Saxons, Normans, and Danes, among the original Celts of Britain, may have contributed to the mental and physical superiority of its inhabitants. The present taste for emigration

* *Last Days of a Philosopher.*

may be also one of those salutary operations of nature by which the effects of a too refined and artificial existence may be remedied; and thus our crowded and luxurious cities are yearly pouring out their thousands, who spread themselves over the uncultivated wilds of America and Australia.

We mark, however, a difference between the early and the later migrations of the human race. Formerly it was an operation of division and dispersion; feuds and animosities, no less than seas and mountains, rent nations asunder, and new languages as well as different habits and feelings kept them irretrievably separate. With emigration, too, for the most part, followed ultimate degradation. Seldom indeed did colonies go forth carrying improvement and increased civilization in their train,—so imperfect were the means of communication to distant regions, that when once a colony or a straggling party went forth from the parent stock, they were lost and forgotten. The multiplication of languages, and the excessive division and dispersion of tribes and nations, impeded vastly the acquisition of knowledge, and much of what had been accumulated by experience or locally acquired, was ultimately lost to the world.

A very different state of things seems now to have commenced. The human family seems to be consolidating rather than dispersing. There is no such event as the origination of a new language; and nations, if they are not actually uniting as regards territorial bounds, are becoming more and more one in opinion and in peaceful unanimity.

The extraordinary facilities of intercourse between nations, both by land and sea—the great modern triumph of art over space and time—is producing wonders in this respect. Who could have dreamed, two centuries ago, of crossing the Atlantic in twelve days, or of traversing the island of Great Britain in nearly as many hours! The time was, in the annals of the human race, that the emigration of Britons to North America would have given rise to a distinct colony of human beings, having a different language and different manners from the parent stock; but a common literature, common tastes and interests, and incessant intercourse, have all tended to preserve them the same,—a vast nation, now far exceeding in numbers that of the parent stock at the period when they separated.

It is scarcely within the bounds of probability to conceive another complete state of isolation over the habitable globe. Changes will inevitably occur—wars and commotions, and temporary interruptions; but hope bids us look for that period when knowledge shall extend from sea to sea, and illuminate all corners of the world. Yet pleasing as it is to contemplate this probable diffusion of intelligence, the analogies of the past, had

we no better grounds of hope, are not without forebodings for the future. Hitherto we have seen the nations of the earth rise in succession into power and intelligence, and, having obtained a maximum of perfection, sink again into sloth and ignorance. The tide of intelligence and national greatness has flowed in successive waves,—here swelling out for a time, and again subsiding,—instead of pouring onward in an uninterrupted and increasing current. Where are now the mighty cities and empires of the earth? Babylon is forgotten. Nineveh, "that great city," lies silent, and undistinguished from the wastes around. Thebes and Luxor possessed their thousands of busy, ingenious, and refined inhabitants. All the arts calculated to benefit and adorn life were intimately known and practised by them. Neighbouring nations came and drank at the fountains of their knowledge. Merchants from afar crowded their marts with costly spices, oils, and precious stones. They lived in luxury, and reared mighty monuments to perpetuate their greatness, and palace-tombs to enshrine their embalmed bodies. But time has scattered all to oblivion, and the rude wandering Arab stalks over the solitary desolation. Where are the once numerous cities, like swarming hives, of Asia Minor? Where the Etruscan capitals, known only to posterity by the remnants of their mouldering tombs? Where the Greek and Roman commonwealths, where taste and refinement, fostered by unbounded wealth and power, rose to the most exquisite pitch of excellence? All are faded from the earth, and vanished as if they had never been. The history of the progress of nations is something like that of the individual. They begin with a youth of struggles,—increase to a mature age in the path of improvement,—but some law of their constitution forbids a farther advance, and they gradually sink into the dotage and imbecility of old age. Nor, perhaps, would a more permanent prosperity be compatible with the destiny of man. Such an universal diffusion of intelligence—such certain means of acquiring knowledge—such an uniform progress of society, would interfere with that probationary arrangement—that mixture of good and evil—which we are led to believe is the lot of man while upon earth.

If ever there was an era which held forth the promise, by the operations of natural means, of a general diffusion of intelligence over the globe, it is the present. The high perfection of the arts—the facilities of rapid conveyance—the influence of printing, and the awakened energies of society, all point in this direction. That the diffusion of true knowledge, and the awakening of an industrial activity in the general habits, with an expertness and proficiency in all the useful arts of life, must tend to benefit the great mass of society, there can be no doubt.

But we must beware of allowing ourselves to imagine that man, in the aggregate, is a being capable of unlimited improvement, or that all the knowledge to which he can possibly attain will ever raise the mind of the species above that point at which the Creator fixed its limits. With his present faculties of mind, the physical attainments of man must have a boundary, which it is by no means difficult to conceive or even to define. These faculties are adapted for the apprehension of effects or phenomena—not for the comprehension of ultimate causes. With all our knowledge of the facts of nature, we are totally in the dark as to a single cause. We speak of gravity and attraction, and organic forces—but these are mere sounds to stand in the place of actual knowledge. As long as effects alone are cognizable by man, he may go on accumulating his store of information, varying his pleasures in the comforts and necessaries of life, and diversifying his imaginative powers by turning these into various channels; but in the meantime his mind has not made a single step beyond its original boundaries—it has acquired a wider field to expatiate upon, and more numerous facts and analogies on which to ruminate, but its conceptions of ultimate causes, and its powers of reasoning remain the same. The probability is, that as great and powerful minds existed in times past as ever may yet fill the future records of fame. The mind of Socrates was as great as that of Newton, though the former was ignorant of the fact that the planets rolled round the sun in certain orbits and in certain periods. Archimedes probably had as much ingenuity of invention, and practical sagacity as Watt; and Homer luxuriated in his fertile fancy with as exquisite a richness as Shakspeare.

To conclude: A rich mine of research still awaits the student of ethnography. The late venerable Blumenbach first led the way; Prichard followed with all the ardour of youthful research, and, not allowing the subject to escape him through the anxious labours of a professional life, has in his late edition of his original treatise accumulated a vast store of highly interesting facts and speculations. The later volumes are particularly valuable, as containing a digest of the labours of several German writers on the subject.

Of the splendid monograph of Dr. Morton on American craniology, it is but justice to say, that, both in the letterpress and numerous accurate figures of native skulls, he has left nothing to be desiderated in the physical history of that interesting and now fast diminishing family of mankind.

We hail, too, the formation of the Ethnographic Society of London, and hope that its labours will tend to elucidate many facts in the history of races and nations.

ART. VIII.—ΚΟΣΜΟΣ. *A General Survey of the Physical Phenomena of the Universe.* By BARON ALEXANDER VON HUMBOLDT. London, 1845.

WERE the republic of letters to alter its constitution, and choose a sovereign, the intellectual sceptre would be offered to Alexander Humboldt. The New World would send deputies across the Atlantic to assist at his installation, and the princes and the philosophers of every clime,—the autocrats of the East and the democrats of the West,—would hail the enterprizing traveller who trod the mountain crests of Europe, ascended the American Cordilleras, and explored the auriferous beds of the Uralian chain. In this estimate of our author's position, we have not forgotten the renown of less popular though brighter names; but it is in the universality of genius, in the wideness of its range and the elevation of its flight, more than in its native originality and power, that we must look for the qualities of an intellectual leader. Leibnitz would have outstripped Newton in a contest for the empire of knowledge; and, as competitors for the throne of mind, Cuvier would have outdone Laplace. In the world of instinct, where physical energy alone is appreciated, we witness another rule. The sagacity of the elephant has not ranked him above his four-footed associates, nor has the wisdom of the raven been held a sufficient title to royal honours. The paw of the lion has vindicated his claim to the throne of the forest; and in the beak and talons of the eagle we recognize his right to the supremacy of the air.

The title of our author to such distinguished pre-eminence will be readily acknowledged by all who have followed him in his brilliant career as a traveller and a naturalist; and those who have known him only by the voice of fame, will recognize in the present work a mind richly gifted by nature, deeply versed in the science and literature of the age, stored with the varied knowledge which study and observation can supply, exercising the highest powers of combination and analysis, intensely alive to the beauty and grandeur of the material world, and thus qualifying its possessor to be the historian and the interpreter of inorganic nature,—the expounder of her phenomena and laws,—the high-priest of her holiest mysteries, and the most enthusiastic yet humblest worshipper at her shrine.

It would be a task at once easy and agreeable to give a critical analysis of a work so remarkable both from its subject and from

its author; but such an analysis, unless on a scale which our allotted space could not permit, would be meagre and unsatisfactory, and would fail to convey to the reader any adequate idea either of the varied interest of the subject or of the talent and research which the author has brought to its discussion. We shall, therefore, endeavour to give a popular abstract of KOSMOS, separating what is speculative from what is true, contemplating great truths in their more striking phases, and thus persuading the reader to enter upon the study of the work itself, and of those branches of knowledge of which it is at once the blossom and the fruit.

But before commencing this important task, we are anxious to discharge the preliminary duty of giving our readers some information respecting the life and writings of Baron Humboldt, of which we believe no account is to be found in any English work. If the biography of distinguished men possesses a high interest when the grave has closed over their mortal remains, that interest is not less exciting when the sage is yet sensible to the voice of praise, and can receive the homage of fellow labourers who have toiled along with him, or of affectionate disciples whom he has instructed and amused. If this instruction and that amusement have been derived from the establishment of great truths, from the description of new and striking phenomena, or from the development of general laws,—lifting the soul from nature to its Author, and preparing it for its final destination,—we know not whether the teacher or the taught will have most reason to rejoice. In this noble enterprize for the abatement of intellectual pauperism and the relief of mental indigence, there has been no such successful labourer as Baron Humboldt. From every zone of the terraqueous globe he has gathered and presented to us all the flowers and fruits of knowledge. On its giant mountain tops, whether tipped with fire or with snow; on its verdant and flowering savannahs, on its burning plains, and in its dark and rugged caverns, he has studied and embalmed nature in all her loveliness and sublimity. Every European community has drawn into its vernacular streams the pure fountains which he has opened up for their use; and now in the seventy-sixth year of his age, and at the close of his intellectual life, he has bequeathed to posterity, in the work before us, the light and heat of its bright and glorious sunset.

Frederick Henry Alexander Humboldt was born at Berlin on the 14th September 1769, and was a younger son* of a noble,

* His elder brother, who was born in 1767, was Charles William Baron Humboldt, celebrated for his literary acquirements. He was Minister of State, Chamberlain, and Privy Councillor to the King of Prussia.

wealthy, and highly esteemed family in that city. He was placed under the charge of M. Kunth, at whose table he met with the most distinguished philosophers of Prussia. In such society, his early passion for science was encouraged, and with such assistance, he made rapid progress in all the studies with which he was occupied. In the public schools of Berlin, Göttingen, Frankfort, and Hamburg, he completed his course of instruction; and had he now coveted the honours and the wealth of office, the influence of his family, and the fame of his talents, would have launched him on the brightest career. His ambition, however, was for scientific renown, and he had no sooner acquired the general knowledge which lectures, and books, and museums could supply, than he hastened to give it form and substance by studying Nature in those grand phases in which she displays her beauty and unfolds her secrets. For this purpose, he travelled through Germany, Holland, England, and along the two banks of the Rhine, exploring the natural history and geology of these interesting regions; and upon his return to Prussia in 1790, he published his first work on *the Basalts of the Rhine*. Notwithstanding the reputation for geological knowledge which he thus acquired, he repaired to Freyberg, to extend and perfect it under the celebrated Werner, who had attracted pupils from every part of Europe. Here he studied, in company with the illustrious Baron von Buch, the internal structure of the earth, as exhibited in its minerals, its ores, and its fossils; and in these pursuits he was led to examine the botany of mines and caverns, and to publish the results of his observations in his *Specimens of the Subterranean Flora of Freyberg*, which appeared in 1793.

The Prussian Government was not long in discovering the fitness of our author for different offices of the State; and it was to his science, and not to his rank, that he owed his nomination as Assessor to the Council of Mines at Berlin, and his subsequent appointment to be Director-General of the Mines in the principalities of Anspach and Bayreuth. These occupations, however, did not afford scope enough to his genius and enterprize. His ardour for scientific research could not brook the interruptions of professional toil, and he longed to throw off the harness of official labour, which had hitherto encumbered him. Schemes of foreign travel had long occupied his mind, and he now sought to prepare himself for their right and speedy accomplishment.

The discoveries of Galvani had about this time surprized and delighted the scientific world. In the convulsive twitches of a skinned frog, when the nerve of its leg was touched with a knife, the anatomist of Bologna had found the elements of a new science. The ardent youth of Italy and Germany rushed into this inviting field of inquiry in quest of fame, and next to Volta, Humboldt

was one of the most active labourers. He not only repeated Galvani's experiments, but made a number of painful ones on himself, which left behind them very disagreeable effects. He made wounds on his back, by means of cantharides, that he might apply more closely to the muscle the two metals of the Galvanic circle. The results of his researches were published in 1796, and such was the estimation in which they were held, that the illustrious Blumenbach enriched with his notes the French translation, the first volume of which appeared in 1799, under the title of *Experiments on Galvanism, and in general on the Nervous and Muscular Irritation of Animals.* No sooner had the original work issued from the press, than its author made the tour of Italy, visited Switzerland, and with his barometer and his hammer, explored the mountainous regions of that interesting land. Returning into Prussia, his passion for visiting distant countries again seized him, and he set out for Paris in 1798, with the double object of studying its collections of natural history, and of profiting by the society of the illustrious men who then adorned the metropolis of France. Here he formed an intimate friendship with Cuvier, Arago, Gay Lussac, and the other high-priests of the Institute, working along with them in their observatories and laboratories, and thus qualifying himself for those researches in foreign climes which he was destined to pursue with such ardour and success. Among the various plans of travel which pressed themselves upon his notice, he seems to have preferred the circumnavigation of the globe along with the unfortunate Captain Baudin; but this scheme was soon abandoned; and dazzled probably by the high expectations of foreign conquest which then occupied the French mind, he conceived the idea of following Buonaparte in his expedition to Egypt, of exploring Arabia and the shores of the Persian Gulf, and of visiting the British territories in India. Various causes, however, frustrated his designs. A better field had been assigned to him by a higher power. Vast regions, unvisited by science, stretched beyond the Atlantic,—teeming with organic and inorganic life,—beautiful in their woods and their valleys,—sublime in their rivers, their table lands, and their mountains, and basking under an equatorial sun,—crossing and recrossing their zenith in its annual course,—and summoning from their fertile soils all that can please the eye and satisfy the wants of man. For such a field of enterprize the genius of Humboldt was pre-eminently adapted, and he was led by a succession of disappointments, as fortunate for science as for himself, to explore that interesting portion of the New World—the Spanish territories of South America—which had hitherto been visited but for the purposes of commerce or of war.

During his residence at Paris, he became acquainted with

Aimé Bonpland, who was to have accompanied Baudin, as naturalist to his expedition; but as the war, which had broken out in Germany and Italy, obliged the Government to withdraw the funds which had been voted for it, our two travellers were induced, by M. Skioldebrand, the Swedish Consul, who was passing through Paris in the charge of presents to the Dey of Algiers, to undertake a journey to Africa. Having been long resident on the coasts of Africa, and possessing much influence with the Dey, he agreed to procure for his friends every necessary facility for exploring those parts of the Atlas Chain which had not been visited by M. Desfontaines, and to give them a free passage on board the *Jaramas* frigate, appointed to convey himself from Marseilles to Algiers, at the end of October. Our two naturalists lost no time in repairing to Marseilles, but after waiting two months for the expected vessel, they learned that it would not arrive till spring, and being unwilling to winter in Provence, they took their passage on board a small Ragusan vessel, which was about to sail for Tunis. Fresh disappointments, however, awaited them; for on the very eve of embarkation, they learned that the Government of Tunis had maltreated the French in Barbary, and that all who had arrived from a French port had been thrown into dungeons. Thus driven from their favourite project, they resolved to spend the winter in Spain, with the view of embarking in spring, either from Carthagena or Cadiz, if the political relations of the East should permit them. In travelling through Valentia and Catalonia, they visited the ruins of Saragossa, and those of the ancient Saguntum, and on their arrival in Madrid, they were received with the highest distinction, both by the Spanish savans and by the members of Government. The Sovereign of the Court of Spain gave them the extraordinary permission to travel freely over all the colonies of Spanish America, and to visit the Marianne and Philippine Isles on their return to Europe by the Asiatic Archipelago and the Persian Gulf. This great privilege was received with gratitude and joy; and after making the necessary arrangements, they quitted the capital, in the middle of May, and traversed a part of Old Castile, and the kingdom of Leon and Gallicia, on their way to Corunna, now blockaded by the English squadron, where they were to embark for Cuba. During a delay which took place of twelve days, they prepared the fine collection of plants which they had collected in the hitherto unvisited valleys of Gallicia, and studied the numerous specimens of fuci and mollusca which the north-west sea leaves in such abundance upon the rugged coast which bears the light-house of the tower of Hercules. The sloop Pizarro, which was to conduct them to the New World, set sail on the 5th of June, and after

tarrying some days to permit the travellers to visit the peak of Teneriffe, it arrived safely at Cumana, the capital of New Andalusia, on the 16th July 1799.

After verifying his instruments, Humboldt travelled through New Andalusia, and Spanish Guiana, determining the geographical position of the most important stations; studying their botany, mineralogy, and geology; and observing the more interesting atmospherical phenomena, as well as the manners and customs of the inhabitants. From Cumana they visited the interesting salt marshes of the peninsula of Araya, where springs of naphtha, flowing from the mica slate, rise from the bottom of the sea in jets and air-bubbles, covering with an oily film the surface of the sea to more than a thousand feet of distance, and projecting its odour into the very interior of the peninsula. Here they saw for the first time the marvellous *piedras de los ojos*, or *stones of the eyes*, which are gathered in abundance at the point of Cape Araya. These bodies are regarded by the natives as both a stone and an animal. When picked from the sand they are motionless; but when placed singly on a polished surface, and wetted with lemon juice, they begin to move. These round stones are from one to four lines in diameter, having one surface plane and the other convex; and when placed in the eye, the animal is said to turn round and expel every foreign substance. They are in reality the porous calcareous opercula of round univalve shells, which effervesce with lemon juice, and consequently move, on the principle of Barker's mill, by the reaction of the issuing carbonic acid, just as, in the *enchanted ovens* of European superstition, the loaves sometimes move in a horizontal direction, by the reaction of the carbonic acid which they disengage.

In their excursion to the mountains of New Andalusia, the seat of the missions of the Chayan Indians, new beauties and wonders awaited them. There the vegetable forms of the torrid zone appeared in all their majesty. Huge masses of tropical vegetation, adorned with the most beautiful melastomas, first met their eye. The tops of the trees, intertwined with lianas, were crowned with long wreaths of flowers; and round their trunks they first saw the extraordinary phenomenon of a gramineous plant (*carice*), climbing like a liana eight or ten feet, and forming festoons which cross the path, and float in the wind. Every where are the trunks of the trees concealed under a thick carpet of verdure; and were the orchideous, and other plants which a single American fig-tree nourishes, carefully transplanted, they would cover a surface of great extent. The same lianas which creep along the ground rise to the tops of the trees, and pass

from one to another at the height of more than an hundred feet. In the valley of Arenas there lived a labourer, Francisco Lozano, who, when his wife had fallen sick, suckled the child with his own milk. In order to quiet the infant, he took it into his bed and pressed it to his bosom; and though he was thirty-two years old, he had never remarked till that day that he had milk. The irritation of the nipple, and the action of the infant's lips, caused the milk to accumulate. The breast of the father increased in size, and yielded abundance of thick and sweet milk, with which he suckled his child two or three times a-day for five months. The ancients speak of the milk yielded by the he-goats of Lemnos and Corsica; and Humboldt himself saw in Hanover a he-goat, which was milked every other day during a great number of years, and yielded more milk than any of the female ones.

The next scene of interest encountered by our travellers was the crevice of the mountain Cuchivano, bounded by perpendicular walls of alpine limestone; and in which are two spacious but inaccessible caverns, from which flames occasionally rush, rising several hundred feet, illuminating the adjacent mountains, and sometimes attended with a dull and long-continued subterraneous noise. These caverns, which are inhabited by nocturnal birds, occur in a wall of rock, rising perpendicularly to the height of 800 toises (4800 feet.)

Among the mountains of Caripe, our travellers visited the celebrated cavern of the *Guacharo*, which the inhabitants of Cumana indicate to strangers as equally marvellous with the eye-stones of Araya, and the milk-giving labourer of Arenas. This extraordinary cavern is pierced in the face of a vertical rock, in a lateral valley from that of Caripe. Its entrance, facing the south, forms a vault seventy-two feet high and eighty wide. Trees of gigantic height crown the rock above. Plants of great beauty spring from the dried clefts of the rocks, while creepers, interwoven in festoons, adorn the opening of the cavern. This luxuriant vegetation extends into the vestibule of the grotto, and is continued for thirty or forty paces. Measuring their course by a cord, they advanced about 430 feet by the light of day; and when the light began to fail, they heard from afar the hoarse sounds of the nocturnal birds, or guacharos, which inhabit in thousands the interior of the cavern, and utter the shrillest and most piercing cries. The nests are fifty or sixty feet above their heads, in holes like funnels, with which the roof of the cave is perforated like a sieve. The spread of their wings is $3\frac{1}{2}$ feet; and as their eyes cannot bear the light of day they quit the caverns at nightfall, and especially when the moon is shining. About mid-summer the natives kill them in thousands, and strip them of a portion of

fat which lies between their legs, and which, when melted, forms a semi-liquid transparent oil, without smell, and keeping above a year without becoming rancid. This cavern gives birth to a small river which is the origin of the Caripe. The guides refused to conduct the travellers farther than 1458 feet from the mouth; though a Bishop had, in former times, penetrated so far as 2500 feet, without reaching its termination.

While preparing for their journey to the Oroonoko, an accident had nearly proved fatal to them both. In crossing the beach at Cumana they were attacked by an infuriated Zambo, an Indian naked to the waist, who, coming up behind, aimed at Humboldt a blow with a huge club-shaped bludgeon: The baron, however, escaped from the stroke by a sudden leap towards the left hand, but Bonpland, who did not see the assailant, received a blow above his temple, which levelled him to the ground. Having raised his friend from the earth, they both rushed upon the Zambo, and a personal conflict took place, in which the Indian drew a long knife from his pantaloons, and would infallibly have slain one or both of his opponents, had not some Biscayan merchants come to their rescue. The villain was with some difficulty secured, but afterwards made his escape by breaking out of the Castle of St. Antonio.

A meteorological phenomenon of universal interest occurred during what is called the season of winter, from the 18th October to the 3d November 1799. A reddish vapour arose at nightfall, and diffused itself in a few minutes over the azure sky. This vapour increased in thickness from the 20th October to the 3d November. The usual cooling breeze ceased, and the atmosphere appeared as if it were on fire. The parched ground cracked. Huge black clouds enveloped the mountains, and extended to the zenith. About four o'clock, hoarse, distant and interrupted thunder was heard over-head, and at the moment of the strongest electric discharge, at a quarter past four, two shocks of an earthquake took place, at an interval of fifteen seconds. Mr. Bonpland, while examining plants, was thrown on the floor, and Humboldt felt the shock strongly, though lying in a hammock. The people, filling the air with their cries, crowded into the public square, dreading the repetition of a catastrophe which, only twenty-two months before, had almost destroyed their city. A third but a slighter shock again occurred at nine in the evening. The dip and variation of the needle were influenced by these earthquakes,—a mechanical effect, probably, though the magnetic intensity is on such occasions considerably affected. The red vapour disappeared on the 7th; and on the 11th November the most extraordinary luminous meteors were seen towards the east. Thousands of bolides and falling stars, moving regularly from

north to south, succeeded each other during four hours, filling a space extending 30° on each side of the true east; the bolides, which were seen on the frontiers of Brazil, a distance of 230 leagues, seemed to burst as by explosion, the largest having a diameter exceeding a degree, disappearing with scintillation, and leaving behind them phosphorescent bands, 15′ or 20′ broad. The falling stars had a distinct nucleus as large as Jupiter's disc, from which started sparks of brilliant light.

Leaving Cumana on the 16th, they landed at La Guayra, the port of Caraccas, which they reached on the 21st November by an extraordinary road of three leagues, more wild and picturesque than the most remarkable passes of the Alps. This interesting city, enjoying the climate of a perpetual spring, has been compared to the terrestrial paradise by a native writer, who has recognized in the Anauco and the other small streams which cross the line, the four rivers of the Garden of Eden. Humboldt has described it as he saw it in 1800, with its eight churches, five convents, its wide streets, and spacious squares; but, in consequence of the delay in the publication of his personal narrative, he has recorded in the same chapter its utter destruction by the terrible earthquake of the 26th March 1812. This fatal day was hot and calm, with a cloudless sky, and from its being Holy Thursday, a great part of the population had assembled in the churches. A shock powerful enough to toll the bells occurred at 4h. 7′, and during five or six seconds the ground seemed to heave up like a boiling liquid. Ushered in by a tremendous subterranean noise, two shocks from opposite directions united their destructive powers. The undulations crossed each other, and nothing could resist the vertical motion from beneath. The whole town was instantly overthrown, with the exception of one street, which was rendered uninhabitable, and between nine and ten thousand persons, not including those who afterwards perished from their wounds and want of food, were buried under the ruins of the houses and churches: Of these above 3000 were crushed by the fall of the vaulted roofs of the churches, and a whole regiment under arms was buried under the ruins of the barracks of San Carlos, which were almost entirely swallowed up. In awful contrast with this scene of desolation was the calm and serene night which followed. The full moon threw its mild radiance over the rugged earth, heaped with ruins, and covered with the dead. Mothers bearing their dead or dying children rushed along the streets. Females wandered about seeking a husband, a brother, or a friend. The wounded, buried under the ruins, implored the help of the passers by, and nearly 2000 were disinterred by the bare hands of the survivors. These, and the sick who had escaped from the hospitals, were laid on the river bank, under the shelter of the trees,

and the dead were consumed on funeral piles erected between the heaps of ruins. The religious and moral effects of so dire a calamity, have been but partially recorded. Funeral hymns were sung by parties walking in procession—while others confessed themselves aloud in the streets; and, as was the case after the great earthquake of Quito in 1797, a number of marriages were contracted by persons who had despised the ordinance. Parents embraced children hitherto unacknowledged. Restitution was promised by persons never suspected of fraud, and families long at variance now met as friends.

Quitting Caraccas, then in its beauty and glory, our travellers commenced their long journey of six or seven hundred leagues, to visit the banks of the great Oroonoko. Crossing the lofty mountains of Los Teques, they found in the deep ravine of the *Quebrada Seca*, a fallen tree of monstrous size, the *Hura Crepitans*, which, though its summit had been burnt, had a trunk 154 feet long, 18 feet in diameter near the root, and 4 feet 2 inches at the smaller end; and in the ravine of Gold, the *Quebrada del Oro*, they met with huge fig-trees, covered with the odoriferous plants of vanilla, and were struck with the huge ribs, which, as high as twenty feet, augment so singularly the thickness of their trunks. Some of these were 22½ feet in diameter near the roots, and as the ribs sometimes separate from the trunk at a height of 8 feet, and become cylindrical roots 2 feet thick, the tree has the appearance of being supported by buttresses. The lateral roots of these trees wind round at the surface of the ground, and when cut at the distance of 20 feet from the trunk, the milky juice gushes out and coagulates,—

"What a wonderful combination of cells and vessels," says Humboldt, "exists in those vegetable masses, and those gigantic trees of the torrid zone, which, without interruption, perhaps during 1000 years, prepare nutritious fluids, raise them to the height of 80 feet, convey them down again to the ground, and conceal beneath a rough and hard bark, under the inanimate layers of ligneous matter, all the movements of organic life."

In the dry and pure atmosphere which embosoms the valleys of Tuy and Aragua, Humboldt studied with great interest the remarkable phenomenon of the zodiacal light, a faint luminous pyramid, which rose sometimes 53° and sometimes more than 60° above the horizon. Its light varied at intervals of two or three minutes, without any corresponding change in the atmosphere, sometimes being very faint, and sometimes exceeding in brightness the milky way in Sagittarius.

After visiting Victoria, a town with 7000 inhabitants, fine edifices, and all the resources of commercial industry; and enjoying

the hospitality of the wealthy proprietors in the rich and fertile valleys of Aragua, our travellers examined the interesting lake of Valencia or Tacarigua, in which new islands have been gradually appearing during the slow retreat of its waters. Among the streams which empty themselves into the lake, are several thermal springs which gush out at three points of the granitic cordillera of the coast. Those of Mariara have a temperature of 133° to 138° Fahr. They emit bubbles of sulphuretted hydrogen, and though issuing immediately from granitic mountains, they are so pure, that Humboldt considers their purity as one of the most curious phenomena which the new continent displays. At the town of New Valencia, which they next visited, they were struck with the extensive excavations formed by the ants, resembling subterranean canals, which, when filled with water, often undermine the building. The burning of the larvæ and the fumigation of the cavities, have been employed to extirpate these troublesome insects, but the Franciscans of St. Domingo, when these means proved ineffectual, elected a saint, by lot, to defend them against their ravages! Three leagues beyond Valencia, the hot springs of Trinchera exhibited a temperature of 194½° Fahrenheit, exceeding that of all other springs but those of Urijino in Japan, which reach within 2° of the boiling point. In this vicinity they met with the *cow* or *milk*-tree (the *Galactodendrum*) which yields, from incisions in its trunk, abundance of a glutinous milk, tolerably thick, without acrimony, and of an agreeable and balmy taste. Our travellers drunk considerable quantities of it without any bad effect, and found it only a little disagreeable from its viscosity. This remarkable tree, though dead and dried in appearance, and though springing from the barren sides of a rock, and for several months of the year without a shower to moisten its arid leaves, yet when its trunk is pierced it yields a sweet and nourishing milk, which the natives hasten to receive and carry home to their children. "We seem," says Humboldt, "to see the family of a shepherd who distributes the milk of his flock." In the *cow tree*, whose milk contains the matter of cheese like that of mammiferous animals;—in the *bread tree*, viz., the *Rema* of the South Seas, the *plantain*, the *sago tree*, and the *Mauritias* of the Oroonoko; and in the *butter tree* of Bambarra, discovered by Mungo Park, we cannot but admire the liberal provision for supplying the most urgent of our wants.

In advancing towards the great basin of the Llanos, or savannahs of Caraccas, our naturalists were amused with the Araguatoes, or howling monkeys, which they saw for the first time in numerous bands, moving in procession from one tree to another—a male being followed by many females, several of which carried their young

on their shoulders. When they cannot leap from tree to tree, the male that leads the band suspends himself by the callous and prehensile part of his tail, and dropping the rest of his body, swings, till in one of his oscillations he reaches the nearest branch; and he is then immediately followed by all the rest of the band. Don Ulloa ascribes to these animals a still more extraordinary sagacity; and has even given an engraving, which represents these monkeys forming a sort of chain with their tails, so as to reach the opposite side of a river! The howl of the Araguatoes is heard at the distance of nearly a mile; and, according to the Indians, they have always a leader who chaunts in a strong voice. The missionaries, too, assert, that when a female is in labour, the choir suspends its howling till the birth takes place.

Our travellers had now arrived at the great steppes or savannahs of the Caraccas. There was something awful, but sad and gloomy, in their aspect. All around they seemed to ascend towards the sky; and, in their vast and motionless solitude, they resembled an ocean covered with sea-weed. "I know not," says Humboldt, "whether the first aspect of the Llanos excite less astonishment than that of the chain of the Andes." The area of these Llanos is about 17,000 square leagues, of twenty to a degree. They are inclined towards the east and south, and their running waters are branches of the Oroonoko.

On the arid plains of Calobozo the mirage displays itself in its numerous modifications; but a still more interesting spectacle awaited the naturalists in the mode of fishing for gymnoti or electrical eels by means of wild horses or mules. About thirty of these horses are forced into a pool in the Cona de Bera, surrounded by Indians with harpoons and long reeds, some on the banks, and others upon branches of trees stretching horizontally over the pool. The tread of the horses' feet drives the eels from the mud, and excites them to combat. They crowd under the bellies of the horses. The terrified quadrupeds seek to flee from their enemies, but the wild cries of the Indians, aided by their long reeds, detain them in the battle-pool, while the eels, stunned and excited by the noise and splashing of the horses, defend themselves by their electric batteries, discharging them in powerful and repeated shocks against the heart, the intestines, and the abdominal nerves of the horses. In less than five minutes, two horses were drowned: several sunk under the violence of the invisible strokes, and disappeared under the water, while others, panting with anguish, and with mane erect and haggard eye, raised themselves and tried to escape from the artillery beneath them. Some of the horses elude the vigilance of the fishermen, and upon reeling towards the shore they stretch themselves on the sand, exhausted with the fight, and benumbed by the shocks of their enemies. The

gymnoti too, some of which are 5 feet long, become exhausted in their turn, and, approaching the shore, are caught by means of small harpoons fastened to long cords. Such of our readers as have felt, as we have done, the electric power of the comparatively small gymnoti which have been recently exhibited in the Adelaide Gallery in London, will be able to form some idea of the severity of the shock.

After quitting Calobozo our travellers forded the Uritucu, a river filled with a breed of crocodiles, so remarkable for their ferocity, that they often come out of the water to pursue dogs upon the shore. They were here shown a tent, in which their host of Calobozo, Don Miguel Cousin, had witnessed a most extraordinary scene. While sleeping along with a friend, he was roused by a horrible noise of violent shakings, by which clods of earth were thrown into the middle of the tent. A young crocodile, 2 or 3 feet long, instantly darted from under the bed, flew at a dog near the door, and missing him, ran towards the river. Upon examining the spot, it was found that the crocodile, in a state of lethargy under the dried mud (which it had entered when in a soft state,) had been awakened by the noise, or by the smell of the dog, and burst forth like a mud volcano, escaping amid the shower of clay which it had cast from its tomb.

At San Fernando de Apure, which they reached on the 27th March 1800, they witnessed the destructive effects of the inundation of the Llanos, in which hundreds of wild horses perish. The colts, unable to keep up with the mares in swimming, are drowned in great numbers—pursued by the crocodiles, the prints of whose teeth are often seen on the carcasses of the horses, mules, and cows that are left upon the plains. These crocodiles frequently succeed in drowning the poor Indian women who fetch water from the river; and the only way of being released from their deadly grasp is to thrust the fingers into both their eyes. From this city, accompanied by Don Nicolas Solto, the travellers descended the Apure, examined the singular intertwinings and bifurcations of that river, and the Arauca, and, after a fright from a Jaguar tiger, reached the great Oroonoko. Descending this interesting river, and studying its mighty cataracts, and the wonderful phenomena of nature which its banks everywhere present, they arrived at Angostura, the capital of Spanish Guiana. Having sojourned six weeks in that city, they returned across the Steppes of Venezuela, and reached New Barcelona on the 24th November, where they embarked for the island of Cuba. After a rough voyage of twenty-five days, they reached the Havannah on the 19th December. Here they remained for above ten weeks, examining the natural history and statistics of Cuba, and making preparations for crossing to Mexico, to join young Captain

Baudin's expedition to the Philippine Isles. With this view, they were about to sail for Vera Cruz, when they learned from the public prints that the expedition was not to land at the Philippines. They therefore resolved upon visiting the Andes, and, leaving the Havannah on the 6th March, they landed at Batabano, on the south coast of Cuba, examined the archipelago of the Jardines and Jardinillos, and disembarked, on the 14th March, at Puerto Guaraba, four miles from the populous town of Trinidad of Cuba, to which they rode, mounted two and two on the same horse, and where they were hospitably received by the Governor. In returning to Port Guaraba, from which they set out for Carthagena on the 15th March, they witnessed a singular display of the *Cocuyos* or phosphorescent insects, the *Elater noctilucus*.

"The grass," says Humboldt, "and the foliage of the trees now shone with that reddish light, the intensity of which varies with the will of the animal. It seemed as if the starry firmament reposed on the savannah! In the huts of the poor, fifteen cocuyos, placed in a calabash with holes, enables them to search for objects in the dark. It is sufficient to shake the vessel to excite the animal to increase the splendour of the disks on each side of its body."

The insects are fed with a little sugar-cane, and they are particularly useful on board ship when all other lights are forbidden, from the fear of pirates.

After a voyage of sixteen days, our naturalists again landed, on the 25th March, in South America, near Point Zapote, at the mouth of the Rio Suin, and, re-embarking on the 27th, they reached Carthagena on the 30th. The insalubrity of the town, however, induced them to retire to the beautiful village of Turbaco, where they remained some time, preparing for their journey to the Andes. Here they examined the *volcancitos* or air volcanoes of that place—about 18 cones, 22 feet high and 80 yards round at their base, occupying an area of 908 square feet, devoid of all vegetation. Each cone had at its apex a crater about 20 inches wide, filled with water of the temperature of the air, through which bubbles of almost pure nitrogen gas easily passed. Five explosions of these bubbles, preceded by a rather loud noise, took place in two minutes. Each bubble contained about 13 cubic feet of nitrogen gas. Other similar openings, with mud walls, about a foot high, are situated on the plain, and seem to receive their gas by separate canals, which doubtless all communicate with a subterranean reservoir of compressed air.

Quitting Turbaco about the middle of April, our travellers ascended the beautiful river of Magdalena, and after a voyage of thirty five days they arrived at Santa Fe de Bogota, the capital of New Granada, where they spent several months. Having visited the

grand cataract of Tequendama,—where the river Funza, 144 feet wide, contracts itself to 12 feet, and throws itself by a double fall over a height of 574 feet, raising a column of vapour visible at the distance of seventeen miles,—they left Bogota, in September 1801, passing the natural bridge of Icononzo, adorned by tufts of shrubs above, and four cascades beneath; and crossing the difficult pass of Quindiu, they reached Popayan, at the base of the volcano of Parace, the crater of which, *filled with water*, emits vapours of sulphuretted hydrogen amid frightful noises. Avoiding in their progress the infected atmosphere of the valley of Patia, at the foot of a burning volcano, they reached Quito on the 6th January 1802.

At the house of the Marquis of Salva-Alegre our travellers were received with the most noble hospitality. Don Carlos Montufar,* the Marquis's son, delighted with their conversation, and admiring the intrepidity with which the love of science had inspired them, resolved to associate himself in their grand enterprize of exploring the Cordilleras; and, when they had made the necessary preparations, they set out in the beginning of June 1802, and in a journey of about fifteen days they encountered difficulties almost insuperable, and exposed themselves to the most imminent dangers. They made two ascents to the volcanic summit of Pinchincha, and visited Cotapaxi, the crater of which they could not reach—a volcano, 18,878 feet high, which has produced eruptions even in our own day. In that of 1738, it threw its blaze nearly 3000 feet above the crater. In 1744, its bellowings were heard at Honda, on the Rio Magdalena, a distance of 690 miles. In April 1768, the air was darkened to such a degree by the ashes which it ejected, that the inhabitants of Hambato and Tacunga were obliged to use lanterns in the streets at mid-day. The eruption which took place in January 1803, was preceded by the sudden melting of the snow, and the noises which it sent forth were heard by our travellers at Guyaquil, 180 miles distant. They next visited the volcanic mountain of Tunguragua, the Vesuvius of the New World, and, after incredible efforts in the dangerous ascent of the mighty Chimborazo, they got within the region of perpetual snow, at the height of 2468 toises (14,808 feet) above the sea. When they had mounted 200 toises (1200 feet) higher, they began to bleed at the nose, mouth, and eyes; and when they reached the height of 3016 toises (about 18,000 feet), which they effected on the 23d June 1802, an impassable crevice, wide and deep, obstructed their path, and forced them to return.

* This noble youth fell a victim to his love of freedom in 1811, when the Revolutionary war desolated Columbia.

Having braved so many dangers, and endured so many hardships, they were almost driven to despair by this unexpected obstacle. They observed, however, on their left a huge projecting mass of porphyry, which formed the highest point of the eastern peak, and having scaled it with considerable difficulty, they established their instruments upon its summit, at the height of 19,500 feet above the sea, an elevation 3485 feet greater than that which was attained on the Coruzon by the celebrated Condamine in 1745, 3600 feet higher than Mont Blanc, and one to which no human being had ever before attained. They directed their instruments towards the west or most inaccessible mountains in the great chain, but particularly to the mighty alp which rose immediately above them to the height of 2140 feet. At their present station the density of the air was reduced one half; their lungs received at each inhalation scarcely enough of air to preserve their vitality; and though they had not reached the remotest limit of the earth and the heavens, they yet felt themselves on the very confines of life and death. After having completed their observations, the party returned to Quito,—parted, never to meet again, with their young companion the Marquis of Salva-Alegre, —and afterwards set off for Peru. In their course to the Upper Amazon, of which Humboldt constructed a map, they traversed the almost smoking ruins where once stood the Rio Bamba, and several other villages, which were swallowed up, with 40,000 inhabitants, on the 7th February 1797, by the most desolating earthquake which history has recorded. After passing Loxa, they entered Peru across the Andes, saw the magnificent remains of the Incas' causeway, which crossed the porphyry heights from Cusco to Assouay, from eight to twelve thousand feet above the sea. Sailing down the Amazon to Tompenda, where they collected much information, geographical and botanical, they returned to Peru. In this journey they examined the great mines of Hualgayoc, where large masses of native silver are found, 13,000 feet above the sea; they saw the ancient Peruvian city of Mansiche, with its Pyramids, in one of which had been found an immense collection of gold, and descending to the great Pacific, they found themselves in the long narrow valley which it washes, (*La serenidad perpetua del Peru*) *where clouds, rain and thunder are unknown.* From Lima, where they staid some months, they embarked for Guayaquil, at which they heard the continued growlings of Cotapaxi, and experienced a severe shock of an earthquake on the 6th January 1803.

The next object of our travellers was to visit Mexico, the country of Montezuma, whose great resources were unknown to Europe and to itself. Embarking at Guayaquil, they landed at Acapulco,—mounted the burning valleys of Mescala and Papa-

gayo, where the river is crossed on the fruit of the *Crescentia Pinnata*, tied together by ropes of agave,—entered the temperate table land of Tasco, with its sylvan scenery, and reached the capital by Cuernavaca.

In this interesting kingdom our naturalists spent more than twelve months. While visiting the mines of Moran, they examined the waterfall of Regla, flanked by vertical basaltic columns, *resting on a bed of clay*, beneath which the basalt reappears. On the 19th September 1803, they descended nearly to the bottom of the volcano of Jorullo, one of the wonders of the new world. Previous to June 1759, the seat of this volcano was occupied by fields of sugar-cane, and indigo, between the brooks of Cuitamba and San Pedro. These fields were bounded by basaltic rocks, one of which, on the west, was the Pic of Tancitaro. In June 1759 alarming subterranean noises were heard by the inhabitants of the Hacienda of San Pedro de Jorullo. Earthquakes succeeded each other for nearly two months, but ceased during the greater part of September. On the 28th, however, the noises having become frightful, the Indians fled to the mountains of Aguasarco. An area of about six square miles, called the Malpays, rose up in the shape of a bladder, and flames issued from every part of it. Fragments of burning rocks were projected to great heights, and, beneath a thick cloud of ashes, the molten surface of the ground swelled up and undulated like an agitated sea. The rivers of Cuitamba and San Pedro rushed into the flaming chasms, and thousands of burning cones, from six to ten feet high, called *hornitos* or *ovens*, and formed of basaltic nodules separating into concentric layers and embedded in black clay, discharged a thick vapour and emitted a subterranean noise. In the midst of these ovens six huge masses, from 1300 to 1650 feet high, rose above the ancient level of the plain, springing from a chasm having a N.N.E. direction. The highest of these masses is the great volcano of Jorullo, which continued to eject basaltic lavas, with fragments of primitive rock, till February 1760. The volcanic ashes thrown out in these eruptions fell thickly on the roofs of the houses of Quentaro, 144 miles distant.* Another

* Regarding this volcano as a phenomenon without example in the history of our planet, Humboldt has ascribed its origin to a deep subterranean chasm, extending east and west 137 leagues, along which the volcanic fire, bursting through the interior crust of the porphyritic rock, has made its appearance at different points of the line of volcanic vents, and inflated the bladder-shaped area covered with the hornitos. Mr. Poulett Scrope, in his *Considerations on Volcanoes*, (App. No. 2, p. 261), has endeavoured to refer the phenomenon to the ordinary principles of volcanic action, and ascribes the convexity of the plain to the union of different currents of lava. Hornitos similar to those of Jorullo were produced in the eruption of Vesuvius in 1822, and were seen in the spring of 1823. They were hillocks five

eruption, accompanied with an earthquake, took place in 1819, when the volcanic ashes fell six inches deep in the streets of Guanaxuato, 140 miles distant. Mr. Bullock, jun., who lately visited this volcano, found that the ovens had almost ceased to smoke, and that the heat of the springs had greatly decreased.*

Having explored the kingdom of Mexico, our travellers embarked in a Spanish frigate for the Havannah, from which, after a sojourn of two months, they set sail for the United States, where they spent six weeks in Philadelphia and Washington, studying the commercial and political relations of that interesting Republic. In August 1804 they returned to Europe, landed at Havre de Grace about the end of the year, and early in 1805 repaired to Paris, to arrange their collections and prepare the materials for a history of their labours.

Soon after his return to France, M. Bonpland was appointed by the Empress Josephine Intendant of the Gardens of Navarre and Malmaison, and he published an account of the rare plants which were there cultivated. In 1818 he went to Buenos Ayres as professor of natural history, and in 1820 he repaired to the interior of Paraguay, not merely as a traveller, but with the view of settling permanently in the country. Having, in partnership with a Scotchman, established at St. Anne, on the eastern bank of the Rio Parano, plantations of *Matté*, the tea of Paraguay, (*Ilex Matha*), he was one morning surprised by the arrival of 100 soldiers, who took him prisoner, along with several of his Indian servants. Some of the Indians saved themselves by swimming, and others were massacred by the soldiers. The plantations of tea were destroyed, and Bonpland, carrying on his back a portion of his valuable collections, was marched to Assumption, the capital of Paraguay, and placed in a fort, as physician to the garrison. The motives of the Director, Dr. Franzia, (who had graduated at Cordova), in this act of violence, have never been ascertained. Humboldt learned in 1824 that Franzia had given Bonpland lands in compensation for his losses, and that he had been erecting distilleries in St. Maria. The most powerful interest was made with Franzia by influential parties in Europe and by the Emperor of Brazil to restore Bonpland to liberty, but no other answer was obtained, than that he was enjoying all the comforts of life, and that he would treat definitively with the Emperor

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or six feet high, emitting columns of aqueous and sulphureous vapour. M. Humboldt has not reproduced his theory in the part of Kosmos which treats of volcanoes. See the *Edinburgh Journal of Science*, January 1824, vol. iv. p. 50, where the Theory and the Examination of it, by Mr. Scrope, will be found.

* For a general account of Humboldt's researches in Mexico, see his *Political Essay on New Spain.*

when certain difficulties between the two Governments were removed. Jealousy, however, effected what royal interference had failed to accomplish. Bonpland became rich and popular, and the ignoble tyrant, dreading the influence of his character, dismissed him from the country in 1831, and seized all his property excepting what was necessary to carry him to Buenos Ayres.

Baron Humboldt's time was now almost entirely occupied in the preparation and publication of the materials which he had collected in the New World. Soon after his return from Mexico, he published a small but popular work, entitled "Views of Nature," which treats, under a general aspect, of several particulars of the "Life of the Earth," the physiognomy of plants, and grassy plains and deserts. In 1806 and 1807, we find him occupied at Berlin in observing the solstices and equinoxes, and the changes in the direction of the horizontal needle every half hour, during several days and nights; but, though his chief object was to study the nocturnal portion of the daily oscillation, yet such was the delicacy of his instruments, that he detected the most capricious changes in the needle,—which exhibited sudden and rapid movements,—to which he gave the name of *Magnetic Storms*—a discovery which was afterwards prosecuted by himself and others with such distinguished success.

The residence of our author was now chiefly in Paris, where he delivered a course of lectures, of several months' duration, on the physical history of the world. In 1818 he accompanied the King of Prussia to London during the memorable visit of the allied monarchs; and in November of the same year, that liberal Sovereign gave him an annual pension of 12,000 dollars, in order to facilitate the execution of a plan for visiting Thibet and the Himalaya Mountains. This journey had been arranged in Paris; and it was understood that the French Government had agreed to be at the expense of it. Some difficulties, however, seem to have occurred, and the future labours of our author were afterwards transferred to another region of Asia. In 1822, he accompanied the King of Prussia to the Congress of Verona; and, along with his distinguished friend, M. Gay Lussac, he made a scientific tour in Italy, in the course of which he visited Venice, Rome, and Naples. Conjointly with the same philosopher he made a great number of magnetical experiments,—confirmed the theory of Biot on the position of the magnetic equator,—determined that the magnetic force diminishes as we recede from the equator, and that it is not affected either by great chains of mountains, or even by volcanoes in a state of eruption.

Yielding to the anxious solicitations of his friends in Berlin, Humboldt, after living eighteen years in France, took up his resi-

dence in his native metropolis, and was received with the highest distinction by all classes of the community. At the great Congress of German Naturalists and Philosophers, which assembled at Berlin on the 18th September 1828, Humboldt, as might have been expected, took a leading part. He was elected President of the Congress, and opened its proceedings with an address distinguished by its manly eloquence, as well as by its just appreciation of intellectual labour, and of the eminent men who had devoted themselves to the pursuits of science. On the evening of the first day of meeting, he gave a grand *soirée* in the concert rooms attached to the theatre. Upwards of 1200 persons assembled on this occasion; and his Majesty the King of Prussia graced with his presence the fête of his illustrious chamberlain. The Prince Royal (his present Majesty) with the foreign princes, foreign ambassadors, and the Prussian nobility, were present. "It was gratifying," says a distinguished friend, the only English philosopher present, "to observe the princes of the blood mingling with the cultivators of science, and to see the heir-apparent of the throne, during the course of the evening, engaged in conversation with those most celebrated for their talents, of his own or of other countries."

In the spring of 1829, Baron Humboldt was invited by the Emperor of Russia to undertake a mineralogical tour to the North of Asia and the Caspian, and he cheerfully complied with a request which enabled him to gratify his desire to visit the East. He accordingly set out, in company with M. Ehrenberg, the celebrated naturalist, and Gustavus Rose, the equally celebrated chemist, and embarking at Novgorod, on the Volga, they descended to Kasan, and passing through the Khirgeese steppe, visited the ancient city of Bulgaride, or Bolgari, the capital of the Tartar empire, and the residence of the family of Tamerlane. From this they went, by Persia, to Ekatherinenberg, on the Asiatic side of the great Uralian chain, consisting of several parallel ranges, presenting on their eastern declivity, either in veins or in the detritus, the most abundant eruptions of metals and gems —gold, platina, the osmiuret of iridium, together with diamond, zircon, ruby, topaz, beryl, garnet, anatase, and ceylanite. In 1826 Professor Engelhardt predicted that diamonds would be found in the alluvium on the Urals, which strikingly resembled that of Brazil, containing diamonds. Humboldt saw the same similarity between the Ural and Brazilian mountains, but though the sand washed for gold was examined in his presence, no diamonds were found. Count Polier, however, after separating from the Baron, repaired to the possessions of his lady, on the western side of the Urals, and discovered the first Ural diamond. Other diamonds were afterwards found, equal in beauty to those of Brazil. Near Nijnei-Tagilsk our travellers found a mass of

platina, weighing 21½ pounds troy; and in the vicinity of Miask three masses of native gold, two of which weighed 18.36, and the other 28.36 pounds troy. Fossil elephants' teeth were met with, surrounded with alluvium of gold dust. Some of these alluvia, formed probably after the destruction of the great fossil animals, are incredibly rich; and that of Wilkni, belonging to the Demidoff family, has already produced more than 2800 pounds of gold. Proceeding along the southern Ural, they visited the fine quarries of green jaspar at Orsk, the celebrated salt mine of Iletzki, the great salt lake of Elton, and finally arrived at Astracan and the Caspian sea.

When the travellers reached the frontier of China, the Chinese commandant, after being informed of their arrival, gave no opposition to their investigations, but merely required as a condition that they should pay him a preliminary visit.

"Seated in his tent, dressed in a suit of silks, and wearing in his cap a long peacock's feather, he received them with a gravity altogether amusing, and sold them, for a bit of red velvet, a historical work, written in the language of his country."

From Astracan the travellers returned, through the country of the Don Cossacks, to Moscow, and arrived at St. Petersburg in November 1829. Here he was received with great distinction by the Emperor; and at an extraordinary sitting of the Imperial Academy of Sciences, he delivered a discourse, containing a general view of the scientific researches recently carried on in the Russian empire.

One of the most interesting results of this journey to Russia, was the establishment of a series of magnetic observatories in different parts of that extensive empire—a measure which Humboldt had long contemplated. He succeeded also in inducing many of the other governments of Europe, and even that of China, to erect similar establishments; and in 1836 he addressed a letter on the subject to the Duke of Sussex, as President of the Royal Society of London, urging the establishment of regular magnetic stations in the British possessions in Canada, Australia, South Africa, and between the tropics. The Royal Society listened to the appeal—the Government gave a grant of money—but delays and difficulties occurred; and it was not till the British Association, at their meeting at Newcastle in 1838, took up the subject, that it was prosecuted with a zeal beyond all praise, and a success beyond all expectation. In order to give effect to this great scientific movement, the British Association, which met at York in 1844, resolved to hold a conference at Cambridge in 1845 of the most distinguished philosophers in Europe, who had taken a part in the magnetical and meteorolo-

gical observations. Invitations were accordingly issued, and were accepted by M. Kupffer from Russia, M. Kreil from Prague, Baron von Senftenberg, Dr. Adolphe Erman from Berlin, Professor Dove from Berlin, and Dr. von Boguslawski from Breslau. The conference having met in June, and deliberated during the sittings of the Association, adopted many excellent resolutions, well fitted to promote the grand object which Baron Humboldt had been the first to pursue.

In the year 1842, Humboldt accompanied the King of Prussia to England in his visit to her Majesty, and was received with much distinction by the leading members of the Royal Society; and in 1843 and 1844 he composed the System of Physical Cosmography, which we are now about to analyze.

This interesting work is dedicated to Frederick William IV. King of Prussia. It is prefaced with an introduction, delivered in 1827-8, at the opening of his course of 61 lectures at Berlin, and entitled—*The Various Sources of our Enjoyment in the Contemplation of Nature, and the Scientific Foundation of the Laws that Govern the Universe.* The work itself consists of five parts.

1. The conception and limitation of physical cosmography as a separate science.

2. The objective contents, or a comprehensive survey of nature at large in the scientific form of a general picture.

3. The reflex action of nature upon the imagination and feelings, as stimulating to its study, through animated descriptions of remote countries, landscape poetry, landscape painting, and the cultivation and contrast in groups of exotic plants, &c., &c.

4. The history of creation, or an account of the gradual development and extension of the idea of the Kosmos as a natural whole.

The word ΚΟΣΜΟΣ, *Kosmos*, which our author has employed as the title to his work, originally signified *beauty* and *order*, but was afterwards employed in philosophy to denote the beauty and order which is exhibited in the world (*tota compages rerum omnium*)—the heavens and the earth—the celestial and terrestrial universe.* Regarding the word *Kosmos*, or Cosmography, as the name of a separate science, comprehending, according to our author's expressions, "a Picture of Nature," embracing the "Celestial Sphere," the "Terrestrial Sphere," and the "Organic Sphere," or that of organic life, it comprehends only the subjects which are included in the *second* of the preceding divisions. The topics which are to occupy the *third* and *fourth* divisions, how-

* Nam quem *κόσμον* Græci nomine ornamenti appellavere eum nos a perfecta absolutaque elegantia *Mundum*.—PLIN. 2, 3. Ut hunc hac varietate distinctum bene Græci *κόσμον*, nos lucentem *mundum* nominaremus.—CICERO, *Philos. Fragmenta*, Timæus *De Universitate*, cap. x.

ever interesting and important in themselves, stand without the pale of Cosmography as a science, and will, therefore, not occupy our attention in the present article.

In endeavouring to convey to the uninstructed mind a correct view of the material universe, we must not for a moment forget that it is from the evidence of testimony alone that the reader can derive the knowledge which he receives. If his teacher proves ignorant, or faithless, or fanciful, omitting great facts, distorting cardinal truths, or drawing upon his imagination, either for the figures or the colouring of his landscape, the faith of the disciple will waver and give way, and even his real acquirements will be ranked among the errors which he has detected, or the phantasms which he has exorcised. Nor is the result less fatal when truth is disfigured or overlaid by metaphysical abstractions, and, like the organic relics of royal life, preserved only when swathed in hideous bandages, and secreted in the vaults of a pyramid. Far be it from us to limit the mind in its analysis and development of physical truth, or to check the fancy from its excursions into the bosom of the heavens, or into the bowels of the earth. We demand only from the expounders of celestial and terrestrial physics, that they separate what reason has established from what they themselves conjecture; and distinguish the probable and possible from what has been really observed and rigorously demonstrated. There is no department of the exact sciences where this passion for the marvellous has been, and still is, more fatally indulged than in that which treats of the starry firmament; and, with the diffusive character of error, it has been imported from our sidereal colonies, where distance weakens the restraints of law and truth, into the mother country of the solar system, where planets, and comets, and satellites, are yet under the rigorous surveillance of geometry and analysis. We regret to be under the necessity of acknowledging, that in several popular works which treat of Astronomy, this science has been drawn, by some insidious current, into the region of romance; and we fear that several portions of the admirable work before us have a tendency to encourage the same licentiousness of speculation. We shall attempt, however, in the present acticle to strip this noblest of themes of its meretricious show, and to bring it back to its native simplicity and grandeur. Truth is never so imposing as when she appeals but to reason,—never so lovely as when unadorned,—never so assured of victory as when she marches without mercenaries and without baggage.

In an age when the globe has been frequently circumnavigated, we make no great demand on the faith of our readers, when we take it for granted that the earth is a sphere 8000 miles in diameter, and revolves round the sun at a distance of 96 millions

of miles. When we look at the heavens above and around us, and observe the stars at different times of the day, from different parts of the earth, or from different points in its annual course, we discover that a very small number of them change their place in the heavens, that a still smaller number change also their brightness and their magnitude, and that the great body of them exhibit no such changes. Hence we are soon led to the great truth that those which do undergo these changes, form, along with our earth and sun, a system by themselves, which has been called the planetary or the *Solar System.*

This grand portion of the universe, in which our lot is cast, and the scene, doubtless, of our future being, consists of a SUN immovable in the centre of the system, and 883,000 miles in diameter, above 100 times greater in diameter than our earth, controlling by its attractive force *seven* great planets which revolve around him in orbits nearly circular,—Mercury, 3224 miles in diameter, in $\frac{1}{4}$th of a year; Venus, 7687 miles in diameter, in a little less than $\frac{2}{3}$ds of a year; the Earth, 7912 miles in diameter, in 1 year; Mars, 4190 miles in diameter, in 1 year and $\frac{2}{3}$ds; Jupiter, 89,170 miles in diameter, in about 12 years; Saturn, 79,042 miles in diameter, in about 30 years; and Uranus, 35,112 miles in diameter, in about 80 years. If we take the density of water as 1, then that of the Sun is $1\frac{2}{13}$, Mercury $9\frac{1}{6}$, Venus $5\frac{11}{13}$, the Earth $5\frac{1}{2}$, Mars $3\frac{2}{7}$, Jupiter $1\frac{1}{24}$, Saturn $\frac{1}{32}$, and Uranus nearly 1. The orbits in which these planets revolve round the Sun, are slightly inclined—not more than 7° in the case of Mercury—to the plane of the Earth's orbit. They all revolve round their own axis, which is differently inclined to the plane of their orbits. In the wide space which intervenes between Mars and Jupiter, no fewer than four small planets were discovered early in the present century, moving in orbits almost crossing one another, and inclined very considerably to the plane of the Ecliptic, or that of the Earth's orbit. The size of these smaller planets, or asteroids, as they have been called, has not been accurately measured, but, as Humboldt has observed, they are scarcely "one-half more in their superficies than France, or Madagascar, or Borneo."

But while these primary planets revolve round the Sun, several of them have satellites revolving round themselves. The Earth *one*, namely, our Moon, Jupiter *four*, Saturn *seven*, and Uranus *six*. In addition to his satellites, Saturn is surrounded with a double ring of solid matter, one of the grandest objects which has been revealed by the telescope.

The Sun with his 11 planets, and their 18 satellites, form, properly speaking, the Solar System; but this system has been visited by great numbers of comets, all of which again quit it,

with the exception of three, whose elliptical orbits do not extend beyond that of Uranus. These numerous comets, of various shapes and magnitudes, and of various forms of orbit, cross our system in paths inclined at every possible angle to the Ecliptic, and after long intervals, again repeat their visits.

"The Solar System," says Humboldt, "in other words, the very variously-fashioned matter which circulates about the Sun, consists of eleven principal planets, eighteen moons or satellites, and myriads of comets, three of which, called planetary comets, never quit the limited spheres of the proper planets. We may further, with no slight show of propriety, reckon as falling within the empire of our Sun, and included within the sphere of his central force:—1st, A ring of vaporous matter, revolving in all probability betwixt the orbits of Venus and Mars, certainly extending beyond the orbit of the Earth, which is visible to us in a pyramidal form, and is known by the name of the *Zodiacal Light;* 2d, A host of very small asteroids, whose orbits either intersect the orbit of the Earth, or approach it very nearly, and give occasion to the phenomena of *aerolites* and falling stones."

Although the *zodiacal* light—which we have previously described, (p. 211)—is here and afterwards introduced, as *a part of the Solar System*, and as, in "great probability," produced by an extremely white ring of nebulous or vaporous matter, revolving in space; yet, as in all favourite speculations, probability soon passes into certainty, and we are subsequently informed, "that the vaporiform particles of which the ring consists," *and which circulate about the Sun in conformity with planetary laws*, "may either be self-luminous or lighted by the Sun." The same language of certainty is repeatedly used by our author, and in concluding his discussion of the Solar System he says,—

"Thus far we have considered what belongs to our Sun, and the world of formations that is ruled by him,—the primary and secondary *planets*,—*comets* of shorter and longer periods,—meteoric *asteroids*, which move single in closed rings, or in multitudes like a stream, finally *a luminous nebulous ring*, which *circles round the Sun near to the orbit of the Earth.*"

In harmony with this spirit of speculation, the ring of vapour is supposed by some to be fed "by emanations from the tails of myriads of comets which approach near to the Sun," while others unite it to the Sun as part of his atmosphere, and declare it to be very probable that it is "closely connected with the *dense world of ether* in the vicinity of that luminary." So vague, indeed, are the conceptions of this *ignis fatuus*, that it is made to contract and expand like caoutchouc, having a "singular variability of extent," and "seeming at times not to extend beyond the orbit of the Earth." While thus animadverting on the speculations of

others, it would ill become us to indulge in any of our own; but when our author thus connects his ring of vapour so closely with the Earth's orbit—when he tells us of the wonderful lightness of many whole nights of the year 1831, in which small print could be read at midnight in Italy and Germany—and of a terrestrial light which, in 1743, was so phosphorescent at midnight, that objects 600 feet distant could be plainly distinguished by its light—and when he acknowledges that these facts are in obvious contradiction to all the latest and ablest observations on the theory of twilight, and the height of our atmosphere—may we not connect the Zodiacal Light with the same class of phenomena, and *conceive* even that the Earth may leave traces of its path in cleaving its annual way through the ethereal void?

The *second* addition which our author has made to the Solar System is, we think, equally problematical with the *first*. That the fire-balls, and shooting-stars, and aerolites, are little planets or asteroids under the dominion of the Sun, is a speculation which astronomers are not prepared to adopt. Never seen beyond our atmosphere—never containing ingredients but those which occur in the crust of the Earth—never found in revolution, but always in descent, and generally accompanied with phenomena decidedly atmospherical—it is premature to pronounce dogmatically on their origin; and still more so to assign them a place among the planets and asteroids that form the empire of the Sun. When the observations of another century have been accumulated, we may then hope to ascertain whether these interesting bodies are revolving planetary asteroids, as our author supposes; or masses projected from the Earth, as the great Lagrange supposed; or volcanic scoriæ from the Moon, as Laplace believed; or aggregations of vaporous matter diffused through our atmosphere; or small fragments of the body now shivered into four asteroids, which once revolved as a single planet between Mars and Jupiter.

From the Solar System, the abode of man—explored by his telescopes and surveyed by his genius—we now pass to those remote regions, where other forms of creation, and it may be, other laws of matter, attest the power and wisdom of their Maker. With the diameter of the Earth's orbit—a base of 190 millions of miles—astronomers have succeeded in proving, that if lines are drawn from the extremities of this base to the nearest fixed star yet discovered—viz. *α Centauri*—the two lines will form an angle of 0".9128, or nearly *one second*. This angle is called the parallax of the star, or the parallax of the Earth's annual orbit. Hence it is easy to calculate—and the result is certain—that the distance of the star from the Earth is about 21,000,000,000,000 miles, or about 12,000 times the distance of Uranus from the Sun; and from another calculation, equally simple and certain,

it follows, that in the space round our Solar System devoid of stars, there is room in one dimension, or one straight line, for 12,000 solar systems—in *two* dimensions, or in one plane, there is room for 130 millions of solar systems—and in actual sidereal space of three dimensions, there is room for 1,500,000,000,000, or one and a half million million of solar systems the size of our own. Thus separated by such an inconceivable void from all other visible celestial bodies, the mind is somewhat startled at the statement made by so many astronomers, and adopted by Baron Humboldt, that our Solar System, thus *isolated* in space, *is part of a larger astral system*, whose dimensions they have ventured to guess, and whose shape even they have been bold enough to delineate.

"If we compare the universe," says Humboldt, "with one of the isle-studded oceans of our planet, we think that we can perceive matter distributed groupwise: now collected into unresolvable nebulous specks of various age—now condensed around one or several nuclei—and again rounded into clusters of stars or isolated sporades. The cluster of stars—the islet in the infinity of space to which we belong—forms a lenticular, compressed, and everywhere distinct, or separate layer, the longer axis of which has been estimated at from seven to eight hundred, and the shorter axis at about one hundred and fifty distances of Sirius," (supposed equal in distance to α Centauri.)

Other authors speak of the *form of the existing universe*, and of ascertaining with definiteness *the shape and dimensions of our firmament*, with as much confidence as if they had circumnavigated creation, and sounded its depths and surveyed its bounds. It would be in vain to grapple with phantoms which scarcely appeal to our senses, or to call in question the form and size of a spectre, when its dupe acknowledges that he was placed in its centre when he saw it. It may be a sufficient defence of our scepticism, to express it in the words with which Humboldt himself prefaces the paragraph which we have quoted.

"We are almost disposed to compare the chapter in our physical cosmography which discusses the nebulous specks of heaven, with the mythological portion of general history. They both begin alike;—the one in the twilight of remote antiquity—the other in the depths of illimitable space; and where reality threatens to disappear, fancy is doubly excited to draw from her own abundance, and to give form and endurance to the indefinite and the changeable."

The lenticular cluster of stars referred to by Humboldt, and the *Firmament* which is called *ours* by Professor Nichol, is nothing more than the *Milky Way** or galaxy, a bright region of stars which

* The only stars in which a parallax has been clearly established are α Centauri by Maclear, 0″.9128, 61 Cygni by Bessel, 0″.3483, and α Lyræ, about 0″.25 by Struve.

seems to form a ring in the heavens. It is assumed, therefore, without any proof or reasonable ground even of conjecture, that the stars which form this ring compose a cluster, near one side of which our Solar System is placed. Now, it is obvious that if the stars of the firmament, including unresolved nebulous masses, are disseminated unequally, they will exhibit groups of stars, or regions of superior brightness. If these regions are united so as to form linear masses, or so as to surround our system, we can have no evidence whatever that such masses form a real group of stars at nearly the same distance, like the trees which form a plantation, or the ships which form a fleet; and still less that stars arranged in a ring round our system, belong to one cluster, including our system. The absurdity of such a conclusion will appear from a description of what is called a *Milky Way of Nebulæ*, which stretches across the heavens almost at right angles to the *Milky Way of Stars*.

"The Milky Way of Nebulæ," says Humboldt, "does not properly belong to our astral system; it surrounds this without having any physical connexion with it, at a vast distance, and passes nearly in the form of a great circle through the thick nebulosity of Virgo (particularly in the northern wing,) through the Coma Berenices, the Great Bear, the Girdle of Andromeda, and the Northern Fish."

As we know nothing of distances in the heavens except in the very few cases where a parallax has been observed,* we cannot pronounce upon the distances of the nebulæ in question. They may be nearer to us or farther from us than the stars in the Milky Way, and though they are now distinct nebulæ, Lord Rosse's telescopes may resolve them, or may unite them by stars or by nebulous matter, so as to induce the speculators of another century to make them a single cluster or firmament, within which our system may find a place.

We cannot better expose the unphilosophical character of all such speculations, than by referring to the celebrated nebula, 51 of Messier's Catalogue, which Sir John Herschel, from its appearance in his best telescope, considered as resembling the nebula of the Milky Way, and which he thence denominates a "brother system." Another writer, Professor Nichol, adopts the idea, repeats Sir John Herschel's drawing of the nebula, and ventures to give a section of it, resembling pretty closely a fox's head without the eyes.

"I have now to state to you," says he, "a remarkable circumstance, *perhaps the strangest and most unexpected which modern astronomy has revealed.* Although the telescope has not yet enabled us to lay

* See this *Journal*, vol. ii., p. 185, where the views of the theory of the Milky Way are somewhat different from those stated in the present article.

out the plan of our cluster, (51, Messier) from *interior* surveys, it exhibits what seems its *very picture* hung up in external space. Look at Plate III. It represents an object resting near the outermost range of telescopic observation not resolved, but doubtless a great scheme of stars, which is the *fac-simile* of that to which we belong."

In the same spirit Humboldt informs us that—

"The form of our astral stratum, and the parted ring of our Milky Way, present themselves *reflected with wonderful similarity* in a nebula discovered by Messier in 1774, and but imperfectly seen by him."

If the reader will turn to the 478th page of our last Number, he will see that Lord Rosse's telescope represents this celebrated nebula in an entirely different aspect, and has proved that it has no resemblance whatever to the conjectured form of the Milky Way. Every improvement of the telescope, indeed, will put an end to speculations founded on observations made with less perfect instruments. Distinct nebulæ will be conjoined,—dark spaces in the heavens, like those in the Scorpion and in Ophiuchus will be filled with light—separate stars will be united with clusters or nebulæ now invisible, round nebulæ will be supplied with curls and branches, uniformly luminous discs will appear in spots and streaks, and apparent condensations of nebulosity will shine in broken and irregular patches.* The observations already made by Lord Rosse warn us against farther speculations in astronomy, and especially against that *sidereal clairvoyance* which pretends to see what is invisible to the telescope. The phrenologist will form a better guess of the shape of the human brain through the scalp and the skin, than the aeronaut who seeks to define the form and limits of the cloud in which he happens to be involved.

Our readers will already have conjectured that Baron Humboldt will be a supporter of the nebulous theory, and of the formation of our Solar System by rings of matter projected from a central Sun.

"If we turn our attention," says he, "to those nebulæ (*World-Mists* separating into determinate forms,) we discover that they are in the course of suffering change in their state of aggregation. * * * These nebulæ are *believed to be* in process of various and progressive changes, according as the *star-dust or vapour* composing them is becoming condensed, in harmony with the laws of attraction, around one or several nuclei. * * * The process of condensation which Anaximenes and the Ionic school once taught, seems here to proceed, as it were, under our eyes. This object of inquiry and conjecture is peculiarly attractive to the imagination."

* In a very short paper, just published by Lord Rosse in the *Phil. Trans.* 1845, Part ii., p. 321, with two plates, the reader will find ocular proof of the correctness of these views.

It might be a sufficient answer to speculations like these, simply to state, that a single particle of the *star-dust* or vapour above referred to, may actually be a sun a million of miles in diameter —that no condensation of the nebulous matter has yet been proved to exist—and that the changes in the form of nebulæ are as yet matters of faith and not of vision;—but as these views of creation have unfortunately taken hold of the popular mind, we are anxious to submit to our readers some facts and conclusions of a very different nature which we trust will put an end to this class of astronomical speculations.

There are many stars in the heavens called variable stars, which change their brightness periodically, sometimes disappearing altogether or nearly so, and then reappearing with renewed lustre. The periods of many of them have been ascertained. Several stars once seen have disappeared altogether, and stars are now seen which were not seen before. Now, whatever explanation may be given of these variations, one thing is certain, that there are portions of celestial matter *not self-luminous*. In our own Solar system we know this to be the case, and we know also that the non-luminous bodies are the most numerous. Hence, we are entitled from analogy to conclude, that the non-luminous bodies in other systems have the same ratio to the luminous ones which exists in our own. These views have received a remarkable confirmation from the discovery of Professor Bessel, described in a preceding article,* that there are non-luminous centrical bodies round which bright stars like Sirius and Procyon revolve. This invisible, or non-luminous matter, and these invisible or non-luminous centrical bodies, may still have a faint luminosity, which, with telescopes of vast power, may yet be revealed to us; but whether this be the case or not, our astronomical speculations have no meaning if they do not take cognizance of those portions of the material universe which are not visible in our best telescopes. We should form a poor estimate of the number and

* See this *Journal*, vol. ii., pp. 197-8. The following are Professor Bessel's own words :—" Stars (such as Sirius and Procyon) whose motions, since 1755, have shown remarkable changes, *must* (if the change cannot be found to be independent of gravitation) *be parts of smaller systems*. If we were to regard Sirius and Procyon as double stars, the change in their motions would not surprise us; we should acknowledge them as necessary, and have only to investigate their amount by observation. But light (luminousness) is no real property of mass. The existence of numberless visible stars can prove nothing against the existence of *numberless invisible ones*. There have been also stars which seemed to possess the peculiarity of a bright body passing over, and which have again lost it ; for example, the star of Tycho. The phenomena, then, of the varying motions of stars which are so important for the results of plane astronomy, seem also to possess interest in relation to our knowledge of the physical constitution of the universe."—*Letter from Professor Bessel to Sir J. Herschel*, Lond. and Ed. Phil. Mag. March 1845. Vol. xxvi., p. 261.

position of hostile bands, were we to judge of them by the glimmer of their lights, without considering the number of dark lanterns which they employ. If there is a *Milky* Way of stars spanning the heavens, and a *Milky* Way of nebulæ stretching at right angles to its plane, so may there be an *Inky* Way of non-luminous stars, or of non-luminous nebulæ, either separate from the former, or so combined with them as to render it impossible, under any circumstances, or with telescopes of any power, to form a conjecture respecting the form or number or position of the celestial creations which form the material universe.

If we dismiss, then, from astronomy its poetical fancies and its groundless conjectures, we shall find but a small number of well-ascertained truths in our survey of the starry sphere.

1. The first grand truth is, the discovery of parallax in the nearest bright stars, such as α Centauri, α Lyræ, and 61 Cygni.

2. The second grand truth is, the existence of binary systems, in which one of the stars revolves round the other, in periods of different duration, varying from forty-three years, as in η Coronæ, to several thousands, as in 66 Ceti and other stars.

3. The third is the existence of groups of stars so very remote, that the most powerful telescopes have not been able to resolve them.

4. The fourth is the existence of stars of variable lustre, the disappearance of some stars, and the reappearance of others.

5. The existence of stars of different colours, these colours arising from the want of certain specific rays in the spectrum which they form.

6. The proper motion of the fixed stars, different from that arising from the earth's annual motion, and apparently owing to the advance of our Solar system to a point in space whose right ascension is 257° 49′ and declination 28° 50′ north.

From the celestial we now descend to the terrestrial sphere—from the consideration of matter seen, to that of matter handled, and weighed, and decomposed—from regions where life is invisible, to man's own birth-place and home, the abode of organic and inorganic life, where his intellectual powers will find their fittest and most useful exercise. In this field of mental toil our knowledge assumes a more positive character, and in following our author through domains familiar to himself, we shall have more frequent occasion to display the docility of the disciple than the vigilance of the critic.

The terraqueous globe, which we inhabit, has not only been circumnavigated, but has been measured by the finest instruments, and the most correct methods of observation. Eleven measurements of large portions of its surface have been made, and

its curvature along different meridians ascertained. Its curvature has also been deduced from experiments with the pendulum, and from particular inequalities in the moon's orbit. By these methods, the polar diameter of the earth has been found to be 652278.66 toises, and its equatorial diameter 6544154.28 toises, viz., 21875.62 yards longer than the polar one,—a quantity equal to $4\frac{3}{7}$th times the height of Mont Blanc, or $2\frac{1}{2}$ times the height of Dhwalagiri in the Himalayas, the most elevated mountain in the world. Hence our earth has the form of an oblate spheroid, resembling an orange,—a form deducible also from the action of the protuberant ring of matter at its equator upon the moon's orbit.* This spheroidal form of the earth is the necessary consequence of its rotation about its polar axis, and indicates that it was once in a soft or semifluid state.

After having *measured* the earth, the next step of the astronomer is to *weigh* it,—that is, to ascertain its mean density, or how many times heavier it would be than a globe of water of the same size. This has been done in three ways:—1st, By measuring the deflexion of a plumb-line from the perpendicular in the vicinity of Shehallion, a mountain in Scotland; 2d, by comparing the length of a pendulum beating seconds on a plane with its length when beating seconds on a mountain, as done by Carlini on Mont Cenis; and 3d, from observing the action of masses of lead or cast iron upon the torsion balance of Mitchell, as made by Cavendish, Reich, and Baily. The first of these methods gave 4.713; the second, as corrected by Giulio, 4.950; and the last, 5.448, which is Cavendish's result, as corrected by Baily, or 5.438, which is Reich's result, or 5.660, which is the mean of Baily's result, varying between 5.507 and 5.847. "The probable error of the whole 0.0032," says Sir John Herschel,† "shows that the mean specific gravity of this our planet is, in all human probability, quite as well determined as that of the ordinary hand specimens in a mineralogist's cabinet,—a marvellous result, which should teach us to despair of nothing which lies within the compass of number, weight, or measure."

But though the earth has been thus measured and weighed, it is but a small portion of it that can be subjected to our inspection and scrutiny. The crust of the earth, as it has been called, is that which intervenes between the highest mountain summit and the bottom of the sea, or of the deepest mine, which is not above 2000 feet below the level of the ocean. When seams of coal form basin-shaped strata, dip downwards, and re-appear at

* The measurement of degrees of the meridian gives $\frac{1}{299}$ as the degree of oblateness; the lunar theory the same, and the experiments with the pendulum $\frac{1}{288}$.

† Life of Baily, *Lond. and Edin. Phil. Mag. Jan.* 1845, p. 61.

measurable distances, it is easy to ascertain the depth of the basin, or the lowest point of the coal seam. M. van Dechen has found that the coal measures of Liege, which contain organic remains, lie at the depth of 3250 feet below the sea level, while the lowest coal strata on the Saarbruck dip 19,406, and 20,656 feet below the sea—as far below that level as Chimborazo rises above it. Hence, as Humboldt remarks, from the summit of Dhwalagiri, the highest point of the Himalayas, to the bottom of this basin, containing the vegetable remains of the primeval world, we have a perpendicular depth of 45,000 feet, or $\frac{1}{753}$ of the earth's semi-diameter. The scoriæ and mineral masses ejected by active volcanoes, come from depths which Humboldt considers to be sixty times greater than those which the labours of man have reached. The depths of the sea, which Sir James Ross sounded with 25,000 feet of line without reaching the bottom, are as thoroughly unknown to man as the very central regions of the globe.

The condition of the interior of the earth, either with respect to structure or temperature, is yet undetermined. As the rocks which form the dry land, have only a mean density of 2.7; and, as the mean density of the dry land and the ocean together cannot exceed 1.6, it is obvious that, in order to make up the earth's mean density of 5.66, the strata of the interior must increase enormously, either from the effect of pressure, or the existence of metallic or heavy materials. From experiments in deep mines, and in Artesian wells, it is obvious that the temperature of the earth increases downwards; and this increase has been estimated at 1° of Fahrenheit for every 94 English feet. That this heat goes on increasing to a high degree, according to Baron Fourier's views, is rendered probable by the ejection of melted minerals and rocks from volcanoes and fissures, as well as from the phenomena of Artesian wells. According to the researches of this eminent philosopher, the temperature of the earth varies from three causes;—1st, from the position of the sun and the season of the year, in consequence of which the temperature changes periodically, according as the heat penetrates from above downwards, or as it passes from below upwards; 2d, from the slow propagation of heat from the tropical regions towards the poles, where it escapes into the atmosphere and into distant space, the temperature of which is probably below the freezing point of mercury; and, 3dly, from the secular cooling of the earth from every point of its surface. As the length of our day has not altered since the age of Hipparchus so much as the one-hundredth part of a second, and as the time of the earth's rotation must depend upon its volume, Fourier has drawn the important conclusion that the mean tem-

perature of the body of the earth has not changed so much as the $\frac{1}{300}$th part of a degree of Fahrenheit during the last 2000 years.

Were the Sun the only source of heat, and our atmosphere and the terraqueous covering of our globe uniform conductors, the equator would be the parallel of greatest atmospheric heat, the poles the points of greatest cold, and the equator and all the circles or parallels of latitude would be *isothermal* lines, or lines of equal mean temperature. This, however, is far from being the case. The different materials, solid and fluid, which form the superficial covering of the earth, absorb and radiate heat unequally, and the currents in the atmosphere and in the ocean, and various other causes, with some of which we are imperfectly acquainted, modify in a remarkable manner the uniform distribution of the solar heat. It is, therefore, only by thermometrical observations that we can determine the forms of the isothermal lines or curves, and the actual distribution of heat in the different climates and regions of our globe. The first person who treated this curious subject was Baron Humboldt, in a memoir first published in 1817, and translated in 1819 by Sir David Brewster. This system of isothermal lines, however, extended only to that of 32° Fahrenheit. The curves of equal mean temperature approached the equator in the meridians passing through Canada and Siberia, and receded from it in the meridian of the west of Europe, but these facts gave no idea of the singular distribution of temperature in the arctic regions, and the only inference drawn from them was—that the climate of America was more severe than that of Europe,—an inference, too, disputed by Sir John Leslie. In this state of opinion, Sir David Brewster conceived the idea that there were two poles of maximum cold in each hemisphere, apparently related to the two magnetic poles; and in order to put it to the test of observation, he obtained from Mr. Scoresby his observations in the Greenland seas, and from Sir Charles Giesecké copious and valuable observations made in West Greenland, at Upernavick, Omenak, Godhavn, Julianæshaab, and Eyafiord. By combining these observations with those of Sir Edward Parry and others, he concluded that the Canadian pole of maximum cold was in W. long. 100, and N. lat. 80°, with a temperature of — 3½° Fahrenheit; while the Siberian pole was in E. long. 95°, and N. lat. 80°, with a temperature of + 1° of Fahrenheit. The mean temperature of the equator, which Humboldt had made 81½°, the author just quoted made 82° 15″ Fahrenheit, a result adopted by Professor Berghaus of Berlin, in his interesting Physical Atlas, now publishing in Edinburgh.* The equator

* The first *four* sheets of this highly interesting and valuable Atlas, greatly improved by Professor Berghaus himself, has been published by him in conjunction

of temperature, or the line of maximum heat, crosses the real equator in long. 102° near Sincapore, passes through Socotra and Kouka in Africa, both to the north of the parallel of 12°, dips to within 2° of the equator in W. long. 18°, rises again till it passes north of the South American continent in 12° N. lat., and sinking rapidly to within 3° of the equator, it crosses it in 150° of W. long., and again descending 7° south of the equator, it gradually rises to it at Sincapore.

While the temperature of the atmosphere thus varies in different latitudes, that of the crust of the earth suffers an analogous change. The sun's rays penetrate to a certain depth, and just beyond that depth the temperature is unchangeable throughout the year, but varies with the latitude. The mean temperature of the earth, which differs little from the mean temperature of the atmosphere, is determined by the temperature of deeply seated springs, or by thermometers sunk in the earth. Some springs are so deeply lodged—such as the Crawley and Black springs near Edinburgh—that they scarcely vary a degree of Fahrenheit throughout the whole year.

"The mean temperature of ordinary springs," says Humboldt, "is lower than that of the atmosphere of the place where they appear, when the water is derived from high levels: Their temperature increases with the depth of the strata with which they come in contact at their origin. The mixture of the waters which come from the mountain elevations, and from the depths of the earth, renders the position of the *Isogeothermal lines*, or lines of equal internal heat of the earth, difficult of determination, when the conclusion has to be come to from the temperature of the springs as they rise: The temperature

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with Mr. A. K. Johnston, in Mr. Johnston's *National Atlas of Historical, Commercial and Political Geography.*—Edinburgh, 1843. These four sheets contain a complete map of the Isothermal Lines of our globe, according to the latest observations, —a map of the Geographical Distribution of the Currents of Air,—another of the Culture of Plants used by man for his food,—another of the Currents of Air,—and a fourth of the Mountain Chains of Europe and Asia. The high approbation which the most distinguished scientific men in England have expressed of these four sheets, has induced Mr. A. K. Johnston to extend his plan, and to publish a new work entitled, "The PHYSICAL ATLAS, a *series of Maps, illustrating the geographical distribution of Natural Phenomena.* By HENRY BERGHAUS, LL.D., Regius Professor of Geology, Berlin, and Principal of the Geographical Institute, Potsdam; and A. K. JOHNSTON, F.R.G.S., and Geographer to her Majesty." This work will embrace the phenomena of meteorology and magnetism, hydrology, geology, phytology and zoology, in thirty maps imperial folio. From the first sheet now before us, containing—1st, A Physical Chart of the Atlantic Ocean. 2. The Mountain System of Europe; and, 3d, The Distribution and Statistics of Plants, after the observations of Humboldt, Schouw, and others, we have no hesitation in recommending this work as one of great elegance and utility, doing equal honour to the talents of its authors, and to the enterprize of the publishers; and calculated to make knowledge popular and attractive, by teaching through the eye, by graphical representation, what can neither be communicated by reading nor conveyed by tabulated numbers.

of springs depends, like the height of the line of perpetual snow, on numerous and highly complex causes. It is a function of the temperature of the stratum in which they have their origin—of the capacity for heat of the ground—and of the quantity and temperature of the atmosphere or meteoric water that falls; which last again, according to the mode of its origin, differs in its temperature from that of the lower strata of the atmosphere. Cold springs can only give the mean temperature of the air, if unmixed with water that is rising from great depths, or that is descending from considerable heights, and when they have flowed for a very long way under the surface of the earth,—in our latitude from 40 to 60 feet, and in the equinoctial zone one foot. These depths are those, in fact, of the stratum of earth in which, in the torrid and temperate zone respectively, the point of invariable temperature begins, in which the hourly diurnal, or monthly variations in the temperature of the air are no longer perceived."

From the temperature of the earth we pass along with our author to its magnetical condition. So early as a thousand years before the Christian era, the Chinese used magnetic cars, upon which the movable arms of a human figure pointed constantly to the south, as a method of guiding themselves through the grassy plains of Tartary; and in the third century—seven hundred years before the compass directed the vessels of Europe—Chinese ships navigated the Indian ocean under the guidance of a needle pointing to the south. Terrestrial magnetism shews itself in three classes of phenomena. A magnetic needle floating in water, or freely suspended by a fibre, or placed upon a pivot, points either to the north or to some other quarter of the heavens. The distance between its direction and that of the meridian, in any place, is called the *declination* or *variation of the needle*, and lines passing through the different parts of the earth where this declination is equal, are called *lines of equal declination* or *isogonial* lines. If the needle is nicely balanced before it is magnetized, it will, when freely suspended, dip, or take a position inclined to the horizon. This dip varies in different places, and the *lines of equal dip* are called *isoclinal* lines. If a needle is made to oscillate horizontally, the number of oscillations which it performs before it is brought to rest, indicates the magnetic force, and the lines of equal magnetic power are called *isodynamical* lines. These lines are generally represented graphically on charts, and without this method of displaying them it is impossible to convey to the reader any idea of their form and windings. The line in which there is no dip is called *the magnetic equator*, and the points where the needle rests in any position are called the *magnetic poles*. "The remarkable connexion," says Humboldt, "between the curvature of magnetic lines and that of

my isothermal lines, was first pointed out by Sir David Brewster," the magnetic poles coinciding with the poles of maximum cold. The various phenomena of terrestrial magnetism undergo hourly changes, apparently depending upon the motions of the sun. Sometimes, however, these changes are sudden, and what is called a *magnetic storm* is produced, causing the needle to oscillate on each side of its mean position. This disturbance of the needle is connected with the *aurora borealis* or *northern lights*. It " indicates an interruption of equilibrium in the distribution of the terrestrial magnetism, and when it is very intense the equilibrium of the distribution is restored by a discharge accompanied with an evolution of light." The phenomena, therefore, of coloured northern lights is the conclusion of a magnetic storm, just as lightening is the conclusion of an electrical storm. While the electrical storm is limited to a small space, the magnetic storm is considered, by M. Arago, as affecting the needle over large portions of continents, and far from the place where the aurora is visible. The northern lights have been seen as far south as Mexico and Peru, and on the 14th January 1831 even so far south as 45° of south latitude. Southern lights have been frequently seen in England by Dr. Dalton. The following interesting account of the *Aurora*, in which all the particulars of the phenomena are embraced in one picture, is given by Humboldt :—

" Low in the horizon, and nearly at the place where it is cut by the magnetic meridian, the clear sky becomes black; and a sort of dusky screen is produced, which rises gradually to the height of 8° or 10°. The colour of this portion of the sky becomes brown or violet. Stars are seen through the haze, as through a dense smoke. A broad and highly luminous arch, first white and then yellow, bounds the dusky segment, but as this arch arises later than the haze, the latter cannot, as Argelander has stated, be the effect of contrast. The highest part of this bright arch is usually from 5° to 18° from the magnetic meridian, towards the side on which the magnetic declination lies.

" The luminous bow, in constant motion, flickering and changing its form continually, sometimes remains visible for hours before rays or pencils of rays shoot from it to the zenith. The more intense the discharges of northern lights, the more vividly do the colours play from *violet* and *bluish-white* through every shade and degree of intensity to *green* and *purplish-red*. The magnetic fiery columns shoot up at one time singly from the luminous circle, even mingled with black rays like thick smoke; at another, many columns rise simultaneously from several and opposite points of the horizon, and unite in a flickering sea of flame, to the splendour of which no description can do justice, and whose luminous waves assume another and a different shape at

every instant.* Around the pole of the dipping needle the radiations finally collect themselves, and form the corona or crown of the northern lights,—surrounding the apex of the canopy of heaven with the mild radiance of its streaming, but not flickering rays. It is only in rare cases that the corona is completely formed; but when it does appear the phenomenon is at an end—the radiations become rarer, shorter, and less brightly coloured—the crown of the luminous arches breaks up, and only broad, motionless, and almost ash-grey, gleaming, fleecy masses are irregularly scattered over the celestial vault;—these vanish in their turn, and, before the last trace of the dusky segment has disappeared,—of this brilliant spectacle nothing is left but a white delicate cloud, feathered at the edges or broken up as a cirro-cumulus into small rounded and equi-distant masses."

The altitude of the northern lights has not been accurately determined. The results vary from three or four thousand feet to 389 miles; but some of the latest observers are disposed, without any good reason, to connect the phenomenon with the region of the clouds.† As magnetic currents are produced by changes of temperature, our earth—scorched at its equator, and frozen at its poles of maximum cold—has been regarded as a great thermometric apparatus, and all the phenomena of terrestrial magnetism, luminous as well as mechanical, as the consequences of this condition.

"What gives," says Humboldt, "this phenomenon (the Northern lights,) its greatest importance, is the fact which it reveals that the EARTH IS LUMINOUS, * * * exceeding by a little, in the case of the brightest coloured rays, that shoot up to the zenith, the light of the moon in her first quarter. * * * In the hotter zones of the earth, between the tropics, there are many thousand square miles of ocean which are similarly light-engendering. Light foaming, flashes the bursting wave,—the wide level glows with lustrous sparks, and every spark is the vital motion of an invisible animal world—so manifold is the source of terrestrial light. And shall we conceive it latent, not yet set free in vapours as a means of explaining Moser's pictures—a discovery in which reality still presents itself to us as a vision shrouded in mystery?"

Another effect of the internal heat of the earth is seen in certain geological phenomena, exhibiting "the reaction of the interior on the exterior of the globe." The most striking of these

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* Lowenorn perceived the oscillations of the Aurora in bright sunshine, on the 29th January 1786.

† See a very interesting Lecture on the Aurora by Professor Potter, in the *Athenæum*, October 18th, 1845, No. 938, p. 1016. Professor Potter considers the Aurora as produced by gaseous matter existing beyond the earth's atmosphere at altitudes exceeding forty or fifty miles.

phenomena are earthquakes, which are distinguished by a series of perpendicular actions from below upwards, by horizontal motions, and by rotatory vibrations following each other in succession. At Rio Bamba in, 1797, the bodies of many of the inhabitants were thrown by the perpendicular movement upon the hill of La Culla, several hundred feet high. The horizontal movement generally takes place in waves in a rectilinear direction, and with a velocity of from twenty to thirty English miles in a minute, but sometimes in circles, or great ellipses, which occasionally intersect one another. The rotatory concussions are the most dangerous. They twist walls without overturning them, and deflect rectilineal plantations of trees, and ridges of land covered with grain. Fields of cultivated ground have been often transposed, one taking the place of the other; but this is connected with a motion of translation, or a mutual penetration of several strata. Humboldt saw at Rio Bamba, a place where all the furniture of one house was found under the ruins of another; and strange disputes took place in Quito, about property, in cases where things were carried many hundred yards from their original stances. Atmospheric phenomena are not produced during earthquakes, as is generally believed. Humboldt only once observed the dip of the needle changed, but neither the intensity nor the declination were affected. In the Piedmontese earthquakes, however, extreme changes took place in the electrical state of the atmosphere. The stupendous earthquake at Rio Bamba was not accompanied with any sound; but noises like rattling, rolling, clanking of chains, and ringing, generally follow. Subterraneous bellowing, and rolling thunderings, alternating with sharp claps, have been heard in a limited space for days and weeks without any earthquakes, as at Guanaxuato, from which the inhabitants fled in terror, leaving behind them great piles of silver bars. The bolder inhabitants, however, returned, and "disputed possession with the bands of robbers who had seized on the treasure."

The undulations of great earthquakes often extend to the distance of thousands of miles. That of Lisbon, on November 8th, 1755, was felt in Sweden, Thuringia, Canada, and the West India Islands. It shook a region four times the superficial extent of Europe. The hot-springs at Tepliz ran dry, and returned with a red colour. The sea at the Lesser Antilles became inky black, and rose 20 feet above its usual level. At Cadiz it rose 60 feet. In 1793, sixty thousand persons perished in Sicily, and about thirty five thousand at Rio Bamba in 1797.

Volcanoes in a state of activity are safety-valves for the regions which surround them. Earthquakes, therefore, exhibit to us the force which produces volcanoes, "but such a force as uni-

versally diffused as the internal heat of the globe, and proclaiming itself everywhere, rarely gets the length of actually eruptive phenomena, and when it does so it is only in isolated and particular places." The force sometimes expends itself *in raising whole districts above their former level*, as in the case of the earthquake of Cutch in June 1809, which raised Ulla Bund, east of the Delta of the Indus, and of that which raised the coast of Chili in November 1822. One of the most remarkable of these upheavings is that of the islands of Cheduba and Reguain on the west coast of Arracan, surveyed in 1841 by H. M. Brig Childers, and situated in the prolongation of the great volcanic band of the Sunda Islands. Reguain consists of three perfect levels differing six or eight feet in height, the inner one having in its centre a volcano 90 feet above the sea. The inner level is the original island, about 7 miles long, and 1½ broad; the one next it equally long, about 4 miles broad, was subsequently raised; and the outer level about 17 miles long, and 6 broad, was raised about 80 years ago. A quantity of petroleum issues from a small volcanic mount at a corner of the original island.* The influence of earthquakes upon man and animals is thus beautifully described by our author.

"Before we quit this great phenomenon, we must advert to the cause of that indescribable, deep, and peculiar impression which the first earthquake which we experience makes upon us, even when unaccompanied with subterranean noises. The impression is not, I believe, the consequence of any recollection of destructive catastrophes presented to our imagination by historical narratives. That which seizes upon us so wonderfully is the disabuse of our innate faith in the firmness of the solid and sure-set foundations of the earth. From infancy we are accustomed to the contrast between the movable element of water, and the immovability of the soil on which we stand,—a belief confirmed by the evidence of our senses. But when the ground suddenly rocks beneath us, the feeling of an unknown mysterious power in nature coming into action, and shaking the solid globe, arises in the mind. The illusion of our early life is instantaneously annihilated! We are undeceived as to the repose of nature—we feel ourselves transported to the realm, and subjected to the empire, of destructive unknown powers. Every sound—the slightest rustle in the air—sets attention on the rack, and we no longer trust the earth on which we stand. The unusualness of the phenomenon throws the same anxious unrest and alarm over the lower animals. Swine and dogs are particularly affected by it; and the very crocodiles of the Orinoco, otherwise as dumb as our lizards, leave the trembling bed of the stream, and rush bellowing into the woods. To man the earthquake is something unlimited and all-pervading.

* *See* Berghaus *and* Johnston's *Chart, No.* 45 *of National Atlas.*

We can remove from the active crater of a volcano; we can escape from a flood of lava that is pouring down upon our dwelling; but with the earthquake we feel that whithersoever we fly we are still over the hearth of destruction."

Our author next introduces us to what he calls elementary MATERIAL PRODUCTION—to chemical changes in the crust of the earth, and in the composition of the atmosphere. We see issuing from the ground, as the produce of extinct or active volcanoes, aqueous vapours, carburetted hydrogen, gaseous carbonic acid gas, sulphuretted hydrogen gas, and sulphurous and hydrochloric acid vapours. Carburetted hydrogen thus emitted, was anciently used in a *portable* state in bamboo tubes in the city of Khiung-tschen in China; and in the village of Fredonia it has been employed in heating and lighting houses. Air springs of carbonic acid gas rise in the valleys of the Eifel and in Western Bohemia, and Monticelli found hydrochloric acid in enormous quantities during the eruption of Vesuvius in 1813. On the 19th May, 1806, in 2° 32′ S. lat., and 20° 46′ of W. long., Admiral Krusenstern observed, in the Atlantic ocean, what he justly calls a rare phenomenon,—"A pillar of smoke sprung up as high as the mast of a ship, which suddenly vanished, but again showed itself, and then entirely disappeared."*

Hot-springs have their origin in mineral strata of very different kinds. They derive their heat from the internal heat of the earth; but the hottest of all of them, viz., the Trincher, a spring, as already referred to,† whose temperature is about 205° of Fahrenheit, flows remote from all volcanoes. Humboldt is of opinion that hot-springs arise from the percolation of atmospherical water into the interior of the earth, and its contact there with a volcanic focus; and in proof of this he mentions the two streams which disappeared at the eruption of Jorullo,‡ and under the severe shocks of an earthquake reappeared as hot-springs.

When a permanent connexion is established between the interior of the earth and the atmosphere, a volcano is produced. The reaction of the interior upon the crust of the earth is often interrupted, and is again renewed. The eruptions of the great volcanoes in the Andes occur at intervals of nearly a century. Eruptions from the craters of some volcanoes are extremely rare. They generally occur at lateral fissures, and in these fissures cones of eruption are occasionally raised.

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* BERGHAUS *and* JOHNSTON'S *Physical Atlas*, Part I., p. 6. Dr. Horner was of opinion that this was either the effect of volcanic action, or the precursor of an island.

† See page 212.

‡ See page 218.

When volcanoes rise above the line of perpetual congelation, very interesting phenomena are produced. Floods arise from the sudden melting of the snow, and heaps of smoking ashes are floated by the torrents on blocks of ice. Caverns become reservoirs of water, communicating with alpine streams, abounding with fish, and when the earthquake, which precedes the eruption, comes, the caverns pour out a deluge of water, fishes, and tuffaceous mud. At the eruption of Carguairazo, 18,000 feet high, in 1698, nearly two square miles were desolated with liquid tuff and argillaceous mud, enclosing dead fishes; and the putrid fever of Iborno, north of Quito, which occurred seven years before, was ascribed to an eruption of fishes from the volcano of Imbabaru.

We have already described the interesting volcano of Jorullo, and as the general phenomena of volcanoes are well known, we shall not dwell any longer on the subject.*

But it is not merely in earthquakes and volcanoes that we discover the reaction of the interior of our planet upon its external crust. The fierce and indomitable agents which are imprisoned in its womb have, in primeval times, burst from their chains, and thrown out upon the earth's surface in a liquefied and softened state, that large class of plutonic rocks which have received the name of *Eruptive* or *Endogenous;* while in other localities they have forced up continents and islands, and thus altered the form and the character of the solid and fluid portions of the globe. In studying the formation and transformation of mineral masses, geologists have discovered four different processes by which they have been produced.

1. ERUPTIVE or ENDOGENOUS rocks, ejected in a melted state from the earth.

2. SEDIMENTARY rocks, or those deposited on the earth's crust, from fluids in which their particles are chemically dissolved, or mechanically suspended.

3. METAMORPHIC rocks, or those altered in their structure and stratification either by contact with erupted rocks, or by the penetration of substances in the state of vapour.

4. CONGLOMERATE rocks, such as coarse or fine-grained sandstone breccias, composed of mechanically-divided masses of the three first species.

The first and most interesting of these rocks were ejected during the chaotic state of the primitive world, and under very different conditions from those which now exist. Numerous and vast fissures must then have rent the pavement of the globe.

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* *See* BERGHAUS *and* JOHNSTON'S *Physical Atlas* for graphical representations of volcanoes.

Vents and natural tunnels must have formed communications between the atmosphere and the burning nucleus, and gaseous currents charged with chemical ingredients must have been working their way among the smaller vents and crevices, while the giant force beneath was upheaving chains of mountains, or protruding islands, or discharging streams of granitic lava and basalt, or forcing them into the cracks and openings which accompany the tremendous agencies that were fashioning the earth. Sublimed by its central fires, or melted in its capacious crucible, the useful ores and the precious metals and gems ejected with the ascending lava, were thus made accessible to man,—at first to add to his wealth and administer to his vanity, but at last to effect that mighty scheme of civilization in which human genius is to fulfil its highest functions.

Under the head of eruptive rocks, Humboldt includes *granite, and syenite, quartzose porphyry, greenstone* or *diorite, hypersthene rock, euphotide and serpentine, melaphyre, augitic, uralitic and oligoe-glassic porphyry, basalt, phonolite, trachyte and dolerite.* The granite sometimes protrudes in vaulted masses like an island. It sometimes covers the clay-slate schists in Siberia for a mile, and penetrates them from above in slender veins; and in the same manner it covers the Jurassic limestone in the mountains of Oisen, and syenite, and chalk and syenite interposed, near Weinbohla in Saxony. The eruptive rocks in the Ural mountains contain many beautiful crystals, particularly of beryl and topaz.

The *sedimentary rocks* include the greater portion of those that were called secondary and tertiary. The oldest have been deposited at high temperatures and under great pressure. This class of strata embraces *schists* or *slates, carboniferous deposits*, viz., the coal formation, *limestones, travertine*, viz., fresh-water limestone *fer*, and the siliceous sinter of hot-springs, and the *infusorial* strata, such as *polieschie*, so successfully studied by M. Ehrenberg. The sedimentary strata are penetrated by veins of the eruptive rocks, which modify the hardness, the silicification and the crystallization of all adjacent ones, even though they are not in contact with them. *Garnets* are formed in clay-slate, under the influence of basalt and dolerte, and *Vesuvian, augite* and *ceylanite* are found at the contact surfaces of eruptive and sedimentary rocks. The *diamonds* of Grammagoa lie in layers of solid silicic acid, and are sometimes enveloped in plates of mica, like the garnets in mica-slate. Humboldt has found beds of pure quartz in the Andes, between 7 and 8000 feet in thickness.

The *conglomerate* or *fragmentary* rocks exhibit two modes of formation. While the materials of some are accumulated by the sea, or streams of fresh-water, others consist of fragments detached by attrition from basaltic or trachytic rocks. These attri-

tion-conglomerates occur in large masses in both divisions of the globe.

From the subject of rocks and minerals, our author proceeds to the interesting topic of Fossil Geology, which he treats very briefly under the heads of Palæozoology, Palæophytology, Palæopetrology, and Polæogeography, or the ancient form and extent of our continents; but as we have had occasion, in two former articles,* to treat these branches of knowledge at considerable length, we shall confine ourselves at present to a few interesting facts mentioned by our author.

In treating of the coal formation, Humboldt observes,—

"In order to form an idea of the luxuriance of vegetation in the former world, and of the masses of vegetable matter accumulated by running water, and which have very certainly been converted into coal in the humid way, I remind the reader that in the Saarbruck coalfield there are 120 seams of coal lying one over another, exclusive of a host of smaller seams, less than a foot in thickness; that there are single seams of coal of 30, and even of more than 50 feet thick, as at Johnston in Scotland and Creuzot in Burgundy; whilst in the forest regions of our temperate zone, the carbon which the trees of a certain superficial extent of ground contain, would not cover this surface with a layer of much more than half an inch in thickness in the course of 100 years. Near the mouth of the Mississippi, and in the *wood-hillocks*, as they have been called, of the Siberian Icy sea, described by Admiral Wrangel, however, there is at the present time such an accumulation of trunks of trees, such a quantity of drift-wood washed down by land streams, and brought together by ocean currents, that the phenomena remind us at once of the events which took place in the inland waters and insulated bays of the primeval world, and gave occasion to the production of the coal formations which we now discover hundreds of feet below the surface of the ground. It is also well to remember that these coal measures are indebted for no inconsiderable portion of their materials, not to the trunks of mighty trees, but to small grasses, and to frondiferous and low cryptogamic vegetables."

In speaking of the new alluvium, upon which lie the huge erratic blocks which have been mentioned in preceding articles, Humboldt expresses his conviction that they have been dispersed by the eruption and tumultuous descent of great masses of pent-up water suddenly let loose by the upheaval of mountain chains. As the oldest members of the transition-formation are the schists and graywacke, which enclose some remains of sea-weed, from the Silurian formerly the Cambrian Sea, our author asks the question:—"Upon what did those oldest rocks, as they are called, repose, if gneiss and mica-slate are to be regarded but as

* Vol. I., p. 1, and Vol. III., p. 470.

metamorphosed sedimentary strata?" To this question he replies:—

"What we call the older Silurian strata, are only the upper portions of the solid crust of the earth. The eruptive rocks which we see breaking through, pushing aside and heaving up these, arise from depths that are inaccessible to us; they exist, consequently, under the Silurian strata, composed of the same association of minerals which are familiar to us under the name of granite, augite, and quartz porphyry, at the points where, by breaking through, they become visible. Resting on analogies, we may safely assume that that which at one and the same time fills extensive fissures in the manner of veins, and bursts through the sedimentary strata, can only be an offset from an inferior bed. The active volcanoes of the present day carry on their processes at the greatest depths; and from the strange fragments which I have found included in streams of lava in different quarters of the globe, I hold it as more than probable, that a primogenial granitic rock is the foundation of the great systems of stratification which are filled with such variety of organic remains."

Our author next proceeds to Physical Geography—a subject of great interest, though but little studied in this country. The proportion of land to water in our terraqueous globe is nearly about 100 to 270; or almost three-fourths of the earth are covered with water. The islands form about one twenty-third of the continents, and the continents occupy three times more surface in the northern than in the southern hemisphere. Though differing in configuration, or rather in the position of their greater axes, the Old and New Worlds are still similar in the extent and outline of their opposite coasts. In the Old World, the larger axes of the continents are from S.W. to N.E., and in the New World from N. to S. Both worlds are cut off towards the N., in the parallel of 70°, and to the S. they both run into pyramidal points, having a submarine extension in the shape of islands and shoals. According to our author, the Atlantic ocean has the features of a great valley, as if floods had directed their shocks successively to the N.E., then to the N.W., and then to the N.E. again.

The upheaving of continents, and the probable depression of the sea, are subjects but of recent study. While the coasts of North Sweden and Finland are rising at the rate of about four feet in a century, South Sweden is sinking. In the course of 1800 years this rise has been about 320 feet. We have no direct evidence of an actual progressive decrease or increase of the sea. In the beginning of the present century, indeed, several harbours in the Mediterranean were left completely dry for many hours; but this and similar phenomena only shew that there may be local retreats of the sea, and even permanent exposures of its shores,

without any general depression of the ocean level. According to Elie de Beaumont, the mountain chains of the globe have been upheaved at different periods, the time of upheaval being necessarily between the time when the erupted strata were deposited, and that when the horizontal *beds* which extend to the foot of the mountains were laid down. These great changes in the earth's crust at first appear to us as evidences of extensive revolutions; but this opinion is greatly modified when we compare the quantity of the upheaved masses with the area of the continents in which they lie.

"The mass of the Pyrenees," says our author, "if distributed evenly over the area of France, would only raise the surface of that country about 108 feet. The mass of the Eastern and Western Alps, spread in the same way over the area of Europe, would raise the land no more than 20 feet. By a laborious calculation I have found that the centre of gravity of the mass of the countries which in Europe and North America rise above the level of the sea, lies at a height of 630 and 702 feet, and in Asia and South America at an elevation of 1062 and 1080 feet."

In these numbers we have a rough approximation to the relative intensities of the upheaving forces in different regions of the earth. These forces have their periods of activity and repose, and the present upheaving of the Swedish coast, and the appearance of new erupted islands, shew us that even our present repose is only apparent. New chains of Alps may yet in future ages separate nations and subdivide empires, and geologists have even ventured to point out the directions in which the internal force is likely to experience the smallest resistance.

The ocean itself has lately been the subject of interesting research. The surface has generally the same temperature as the air which rests upon it, but from the equator to the parallels of 68 north and south it is somewhat warmer. The temperature decreases downwards, and in the voyages of Kobzebue and Dupetit Thouars, water was obtained from great depths as cold as 2°8 and 2°5 cent., (37° and 36½° Fahr.) This icy temperature, which prevails even in the depths of the tropical seas, shews the existence of inferior polar currents proceeding from the poles to the equator. The surfaces of all the seas that communicate with each other are generally on the same level. Winds and currents, however, in the case of land-locked seas, occasion local elevations. At the Isthmus of Suez, the Red Sea is at different hours of the day from 24 to 36 feet higher than the Mediterranean. In the open sea the tides rise only a few feet, but, owing to conflicting tides, they sometimes rise at St. Maloes 50 feet, and in Nova Scotia to 65 or 70. The great equatorial current from east to west, supposed to arise from "the advancing times of the tides and of the trade winds," moves

with a velocity above ten English miles every twenty-four hours. The narrow currents, or *ocean rivers*, "run warm water in higher and cold water in lower latitudes." The gulf-stream is an example of the first. Commencing probably to the south of the Cape, it passes through the Carribean Sea and the Gulf of Mexico, and turns first northward and then eastward, throwing off branches to the north and south, producing the fogs of Newfoundland, and reaching even the British shores. The average velocity from the Nore to lat. 31 N. is about 56 geographical miles in 24 hours. The greatest velocity near the Bahamas is 120 miles. Its temperature is sometimes very high. Although the currents are supposed by Lieutenant Maury to be the great highways by which migratory fishes travel, yet the whale is averse to the warm water of the gulf-stream, though the sea nettles, the *Medusæ*, which are the chief food of the whale, occur in great quantities, covering the sea for leagues, in the gulf-stream, which conveys them to the Azores, the great resort of whales; and thus "the Gulf of Mexico," says Lieutenant Maury, "is the harvest-field, and the gulf-stream the gleaner, which collects the fruitage planted there, and conveys it thousands of miles to the hungry whale at sea."*

Among the most remarkable oceanic phenomena are the Great Fucus banks of Corvo and Flores, called the *Sargaco Sea*, in the middle of the Atlantic. It occupies the eddy caused by the revolution of currents, and stretches north and south between the parallels of 18° and 48°, and the meridians of 30° and 42°. The *Fucus natans*, or sargazo, a species of sea lentils or duck-weed, from which this sea, sometimes called the "grassy sea," takes its name, has a beautiful green colour. It floats on the surface, and is often so thickly matted as to retard greatly the progress of vessels. The quantity of it is surprising. Humboldt says that the surface which it covers "is more than 260,000 square miles, almost six times as large as Germany,"† and he considers it as vegetating while floating above the numerous sand banks which he conceives produces it.

In contrast with the gulf-stream is the great and cold current of the Pacific ocean, which brings the colder water of high southern latitudes to the coasts of Chili and Peru. In the middle of the tropics its temperature does not exceed 60° Fahrenheit, while the still water beyond it varies from 81½° to 84½°.‡

Although our author has not included either glaciers or icebergs

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* *American Journal of Science*, vol. xlvii., p. 179.

† *Humboldt's MSS.*, quoted in Berghaus and Johnston's Physical Atlas, No. I., p. 5, where all the ocean currents and this Fucus bank are graphically represented.

‡ See this *Journal*, vol. i., p. 527.

in his summary of physical geography, they form a very interesting portion of that branch of science. Detached from the immense glaciers in the arctic valleys which open into the sea, icefields 100 miles long, 50 feet broad, and from 4 to 6 feet high, are thus put to sea; and ice-islands have been met with from 180 to 200 feet high, and therefore, (as ice shows only one-eighth of its bulk above the water), not less than 1600 feet beneath the surface. The Great Western encountered an ice-island about 100 miles long. The largest iceberg was three-fourths of a mile long, and the highest 100 feet above the water, or 900 feet in altitude. About 300 were seen by this steamer. Captain Weddel found himself within two ship's length of an ice-island 180 feet high. The lofty part overhung the rest, and was cracked from the top down to the water-line.

"Within half an hour," he says, "we had the appalling sight of the overhanging mass immediately over our quarter-deck, with the fearful sensation that if our masts came in contact with it, the projecting part would fall upon us, and sink both vessels. Our escape was caused solely by our having a large piece of flat ice between us and the ice-island, which prevented us from touching it."

These ice-masses are found as far south as 40° of north latitude, and are believed to have occasioned the loss of the President steamer.*

From the ocean we ascend to the atmosphere, which exhibits, according to our author, six classes of natural phenomena, viz., chemical composition; changes of transparency, polarization and colour; in the density or pressure; in the temperature, humidity, and electricity of the air. While its oxygen is the pabulum of life, it is itself the carrier of sound, the instrument of speech and of social intercourse. Dry air contains in 100 parts 79.2 of azote and 28.8 of oxygen, with from 2 to 5 ten thousandths of carbonic acid, a still smaller quantity of carburetted hydrogen, and traces of ammoniacal vapours. Poisonous exhalations rise from the ground, and give a peculiar smell to fogs. Substances in a state of minute subdivision rise into the atmosphere; and the dust which creates a mist about the Cape de Verd Islands, has been found by Ehrenberg to contain an infinity of infusory animalcules with siliceous shells.

The weight of the air changes hourly, reaching its maximum at $9\frac{1}{4}$ A.M. and $10\frac{3}{4}$ P.M., and descending to its minimum at $4\frac{1}{4}$ P.M. and 4 A.M. The daily change varies from 1.32 line at the equator to 0.18 of a line in latitude 70° north. According to Professor Dove, the difference in the temperature of the equato-

* See the Section on Icebergs and Doubtful Islands in Berghaus and Johnston's Physical Atlas, No. I., p. 6.

rial and polar regions produces two opposite currents in the upper regions of the atmosphere and on the surface of the earth; and in consequence of the difference in the rotatory velocity of these regions, the current from the pole acquires an eastern, and that from the equator, a western direction. In the struggle between these antagonist streams, we find the cause of the variations of atmospheric pressure and temperature, of the precipitation of moisture, and of the formation and shape of clouds. The laws of the wind remain yet to be investigated. Their strength during the day increases with the temperature, and, according to Mahlman, in the middle latitudes of the temperate zone, the W.S.W. is the prevailing wind.

The distribution of heat, as exhibited in the mean annual temperature, varies from the equator to the poles, according to Sir David Brewster's formula, in the meridian of the west of Europe as the cosine of the latitude, and not as its square, as Tobias Mayer maintained, the north and south poles being reckoned the coldest points. This, however is not the case, for according to the first of these authors, there are two poles of maximum cold, one in Canada and the other in Siberia. The mean annual temperature of any place in reference to the first of these poles is found by multiplying 86°.3 by the distance of the place from the pole and subtracting $3\frac{1}{2}°$; while for the other pole it is obtained by multiplying 82.°8 by the distance of the place from it. Hence the isothermal lines near the cold poles encircle them like rings, to which an approximation will be seen in the chart of Berghaus, already referred to. The mean annual temperature occurs at two times of the day, distant 11h. 15′ from each other, about $9\frac{1}{4}$ A.M., and 8″ 30′ P.M. The five branches of the daily curve are nearly parabolas, but of different magnitudes. Humboldt gives the name of *isocheimal* to the lines of mean winter heat, and *isotheral* to those of mean summer heat. The line of perpetual congelation, or the snow line, reaches different heights in different latitudes and on different mountains. It depends not only upon the temperature and moisture, but upon the height and configuration of the mountains themselves. In South America the snow line reaches as high as Mont Blanc. In the high lands of Mexico it descends below that height 960 feet, and in the Western or Chilian Andes it rises more than 250 feet higher than under the equator. On the volcanic mountains of Penguenes, in 33° S. lat., Dr. Gillies found it at 2270 and 2350 toises above the sea. The volcano of Aconcagua, in lat. $32\frac{1}{2}$ S., N.E. of Valparaiso, though 1400 feet higher than Chimborazo, was once seen without snow. In the Himalayas, the snow limit of the southern slopes is about 12,000 feet, and on the northern ones about 15,000.

The quantity of vapour in the atmosphere varies, like the

temperature, with the latitude, the height above the sea, the season of the year, and the hour of the day. When precipitated in the form of dew, fog, rain, or snow, it forms the vivifying principle of the earth, supplying the vegetable world with their food as well as with their drink. In the parched regions of Cumana, Coro, and Ceara, where, for six or seven months, no visible dew or rain ever falls, the stems and the leaves of plants must draw moisture from the air by some vital process. In other countries the fall of rain is enormous. In Havannah 102 Paris inches have fallen in the year, four times as much as at Paris or Edinburgh. On the slopes of the Andes, the rain diminishes with the height.

The electricity of the atmosphere has been studied chiefly in its brilliant manifestations in the thunder-storm: Its source and its diurnal changes are yet to be explored. Its influence on the nervous system of man, and over the circulation of the sap of plants, give it high importance as a sublunary agent. While some ascribe its development to the evaporation of fluids containing earths and salts—to the growth of vegetables—and to the unequal distribution of heat, M. Peltier has ascribed it "to the influence of a constantly negative charge of our globe." According to the same author, slate-gray coloured clouds have resinous, and white, rose, and orange coloured clouds vitreous electricity. Thunder-clouds sometimes involve the highest summits of the Andes, and have been measured at a height of 251,000 feet; but generally they descend to within 5000, or even 3000 feet of the ground. The discharges of lightning from these clouds are, according to Arago, of three kinds—zig-zag or forked, and sharply defined at the edges; lightning illuminating whole clouds; and lightning in the form of fire-balls;—the two first continue only the thousandth of a second, the last for several seconds. On the coast of Peru thunder and lightning are unknown; while under all the other tropical zones, at certain seasons of the year, and four or five hours after noon, thunder-storms occur almost every day.

To the various agencies which we have been considering, Humboldt has given the expressive name of the "LIFE OF THE EARTH"—a condition not void of analogy with that of other forms of being, in which the living principle is more normally displayed. Mark our planet's power of locomotion, in its diurnal movement, and in its annual course—the dignity of its march, the fidelity with which it keeps its appointments, and the even tenor of its way, as it wheels its ethereal round. Behold the variety of its dress—the verdant drapery of spring, the flowery robe of summer, the russet mantle of autumn, and the eider

down of its snowy coverlet. See the flash of its eye, in the aurora's fire columns, in the volcanic flame, or in the lightning's blaze. Hear its gentle voice in the murmurs of its granite rocks—the tinkling of its driven sand—the murmurs of its waters; or its louder strain in the roar of its foaming breakers, and the awful diapason of its subterraneous thunder. Listen to its breathing in the gaseous elements which exhale from its pores —or in the suffocating vapours which rush from its burning lungs. Nor is this *Earth Life* but a name to please the imagination, and scare the judgment. The globe which it animates has a real dynamical existence—instinct with vital power—sustained from perennial resources, and wielding inexhaustible energies. No created arm is needed to repair its mechanism, nor human skill to direct its operations. The mighty steam power, which works the wonders of our age, is but man's tool—useless unless he guides it—dead unless he feeds it. But the locomotive giant which carries us on its shoulders is framed by an abler artist, and poised by a mightier arm. It affords to man's mortal being a pilgrim home,—at first a cradle—at last a grave. It is the nursery too of his race—the gymnasium for the development of his intellectual powers—the Elysium of his enjoyments. But while thus the self-supplied storehouse for his physical wants, it is tributary also to his spiritual necessities. It is the grand penitentiary of the moral world—in which are tried the spirits, and searched the hearts of its inmates; and, according to the efficacy of its discipline, it may prove either the gloomy prison car which conducts to judgment, or the triumphal chariot which transports to victory.

From the consideration of the phenomena which constitute the life of the earth, Humboldt proceeds to the subject of organic life—the geographical distribution of plants and animals, and the classification of the different varieties of the human race. In so inviting a path we would cheerfully follow him; but our exhausted space, and, we fear, the exhausted attention of the reader, counsel us to draw to a close.

In wafting ourselves in imagination to our own satellite, the Moon—the nearest of our celestial bodies—we have passed over a distance equal to *thirty* times the diameter of our globe. In advancing to the Sun we travel over a distance equal to 400 times that of the Moon; and before we reach Uranus, the remotest of the planets, we have traversed a space equal to twenty times the Earth's distance from the Sun. Thus placed at the limits of a system, enclosed in a circle 1800 millions of miles in radius, our appreciation of distance would appear to be exhausted; and we seem to be on the margin of an unfathomable abyss.

The telescope, however, and the mural circle, have enabled us to span the void; and the genius of man, proud of the achievement—and justly, if humbly, proud—has crossed the gulf 12,000 times the radius of his own system, that he may study the nearest world in the firmament of heaven. Beyond this frontier lies the whole universe of stars—their binary systems—their clusters, and their nebulous combinations. The observed parallax of *one fourth of a second*, in α Lyræ, carries us *four* times as far into the bosom of space; but though beyond this we have no positive measures of distance, it would be as unphilosophical to assign limits to creation, as to give it an infinite range.

In this rapid flight into space we have traversed it but in one dimension, and the line which we have traced is but a unit in the scale of celestial distance. Creation, in its wide panorama, is still beyond us, above us, and around us. The overarching heavens still enclose us, and distant worlds yet sparkle in their canopy. If from this bourne, from which the astronomical traveller alone returns, we look back upon our course, our own planetary system ceases to be perceived. Its sun is dim—itself but an invisible point in the nebulous light which intervenes. Where, then, is our terrestrial ball—its oceans—its continents—its hills—it empires—its dynasties—its thrones? Where is our father-land—its factions—its Christian disunions—its slave crimes, and its unholy wars? Where is our home—its peace—its endearments—its hopes and its fears? Where is man, the intellectual monad—the only atom of organic life that can pierce the depths and interpret the enigma of the universe?—and yet the only spark of a spiritual nature which disclaims the authority and resists the will of the universal King! They have all disappeared in the far off perspective—the long vista of space, whose apex, were it a sun, the hugest telescope would fail to descry. No living thing here meets the eye, and no sentiment associated with life presses on the affections. The tiny organisms of earth and ocean—every thing that moves and breathes, that grows and dies—all are ingulfed in the great conception of the universe. The straining mind cannot unite the incommensurable extremes. The infinite in space—the eternal in duration—the omnipotent in power—the perfect in wisdom, alone fill the expanded soul, and portray, in their awful combination, the CREATOR OF THE UNIVERSE.

In retracing his downward path, the astronomer traverses the same spheres, but with invigorated conceptions, and exalted desires. His sun and system swell upon his view. His own planet resumes its colossal magnitude. The mighty ocean and the everlasting hills recover their grandeur. His country—his home, again rouse the warm associations of love and duty. The

earth on which he treads becomes the subject of his scrutiny. He surveys its domains—its oceans teeming with life, and its forests ringing with the cries of their ferocious occupants. He penetrates its depths—he ponders over the cycles of once living forms, now entombed in its catacombs of stone. He numbers the catastrophes which overwhelmed them. He discovers the seat and elements of the destroying force; and without the exercise of faith, with the sharp glance of his reason, he recognizes the Great Creator presiding at each catastrophe, to revive, in nobler forms, the beings he has extinguished, and to prepare his infant world for the reception of a race which is to bear his image, and enjoy his favour, and advance his glory. Thus familiar with the mechanism of forms that breathe, and of natures that suffer,—life past, life present, and life to come, are ideas of deep interest and frequent recurrence. The measured span of his own existence, upon which every day encroaches, and the fixed hour at which he is to be "released from clay," which every pulsation hastens, add solemnity to his studies, and anxiety to his aspirations;—and to those heavens and those stars to which he once looked but with the proud eye of reason, he now addresses the language of faith and hope, without desiring and without dreading the transition which he hails.

Bright star of Eve, that send'st thy softening ray
Through the dim twilight of this nether sky,
I hail thy beam like rising of the day,
Hast thou a home for me when I shall die?

Is there a spot within thy radiant sphere
Where love and faith and truth again may dwell,
Where I may seek the rest I find not here,
And clasp the cherish'd forms I loved so well?

ART. IX.—1. *Quarterly Review, No. CLI., Art. IX.—Ireland.*
2. *The Catholic Claims. A Letter to the Lord Bishop of Cashel.* By BAPTIST W. NOEL, M.A. London, 1845.
3. *The Catholic Claims Considered. A Review of a Letter to the Lord Bishop of Cashel, in the Irish Monthly Magazine for September* 1845.

THE "ideal of a Christian Church" has become, in our day, not a theoretical, but a great practical question; it has ceased to be a merely speculative subject of inquiry and discussion—it has resumed its place among the elements of action as well as of thought; and it seems likely to possess that character more and more every day. The relations of Christian communities among themselves, and still more, the relations between them and the civil governments with which they come in contact, are probably on the eve, either of a re-adjustment, or of a revolution; and doubtful disputations, which many imagined to have been for ever banished to the shelves of unread libraries, and the closets of dreamy students, are again mixed up with the actual measures and daily business transactions, not of ecclesiastical bodies only, but even of Cabinets and Parliaments.

Is there a Church of Christ—in any sense—that is not mystic and intangible?—and, if so, what is it? and how are the multitudinous and motley sections, all claiming that appellation, to be grouped and marshalled in anything like order?—are inquiries which men of affairs would gladly evade, or leave to men of erudite and idle leisure. But, irksome as they are, such questions as these are forcing themselves on the attention of the most exclusively secular politicians. On the other hand, the adjustment of the province belonging to civil government, and the duty devolving on it, in reference to religion, is not only in danger of being run up into an insoluble knot, but threatens also to become one that must be summarily cut. Plausible abstractions and theories of optimism in the argument between Established-Church and Voluntary divines, will no longer meet the emergency; the sweeping application of a general formula—as that the State has nothing to do with religion, or that it has everything to do with it—is now irrelevant or impossible; and controversialists, who might find it more convenient to deal with axiomatic universals, in a sort of algebraic and imaginary equation, must consent to encounter practically the vulgar fractions of an arithmetical balance among existing quantities, each element of which seems to be taking more the shape of a mixed or broken number—as the whole calculation proves to be more complicated—than the mere framers of a system, on either side, were inclined to suppose.

In these circumstances—when the statesman must have so

deep a concern, or thinks he must have so deep a concern, with matters ecclesiastical, and the churchman is forced so largely to admit the exigencies of civil politics, as disturbing, if not regulating, elements, into his more spiritual calculations—the inquirer is thrown back upon first principles, as well as forward upon ultimate results, and it becomes important to aim at an equitable and practicable adjustment.

Priestcraft, state-craft, or king-craft, and, if a new coinage be allowed, conventicle or sect-craft, may be regarded as the symbolic terms of the three alternative ideas respecting any religious institute or association, of which alone it ever enters into the mind of a politician to conceive. All order and organization for cherishing or expressing the religious sentiment, he at once sets down, either to the invention of interested parties, ecclesiastical or civil, who seek to manage the religious spirit in the masses of mankind, or to the spontaneous impulse of their own individual or gregarious wills. That the clergy or priesthood should seek to maintain a church system which may aggrandize themselves, is admitted to be natural, but dangerous; that civil governments should aim at wresting this power out of their hands, is equally natural, and as it would seem, somewhat safer; that the reins should fall from the grasp of both, and the entire religious community be left, each to do what is right in his own eyes, with no King in Israel, is held to be the only remaining possibility, and is dreaded and deprecated as the worst of all. It would be a great matter to get men persuaded to admit that God can govern his own Church on earth. That he is the Lord of individual consciences, and, as such, both entitled and competent to regulate every individual's private faith, so that it is intolerance and persecution for any other to interfere with him, is now all but universally allowed. But there is an unwillingness to recognize in reference to a society, what is admitted in regard to individuals. Private religion, or as the phrase goes, what is between a man's own conscience and his God, is to be respected and held sacred; but any thing like public religion, or what is to bind men together for government or for action, if it be not a spiritual despotism on the one hand, or a civil ordinance on the other, can be nothing more than voluntary combination or conspiracy; and in any view of it, therefore, may and must be capable of compromise and modification on principles of accommodation and expediency.

We may observe, in passing, that this may partly explain the limitation which some would practically impose upon the great law of toleration. When it is a question of individual opinion that is raised, liberty of thought and speech is fully conceded; but when it takes the form of a church-controversy, or an adherence to one communion rather than another, the same indulgence

is not considered necessary; and liberty of action is abridged or restrained. To employ measures of coercion for the purpose of dictating to a man what he is to believe, in the smallest particular affecting his personal salvation, would be universally reprobated, as an attempt to interfere between him and his God; but if it is merely to prescribe to him what his Church shall be, and if the point at issue be not a matter of doctrine, but one of discipline or order,—for such is the favourite and fashionable discrimination with many,—in that case, the use of influence and authority is felt or fancied to be more legitimate. And the reason, at least in part, may be, that while the whole range of personal belief, if we may so call it, is undeniably within the domain of conscience—the agitated questions of preference or precedency among the various modes of church polity are supposed to lie more towards the region of mere will. Hence, those who would be very far from stigmatizing as "heretical pravity," a man's peculiarity of view on such subjects as Justification and the kindred doctrines of Grace, have little hesitation in setting down to mere caprice and perverse obstinacy his scruple about belonging to a particular communion; to tamper with the former, would be to wage war with conscience—to overmaster or overpersuade the latter is a mere victory over will; and it is good to get the better of narrow-minded prejudice and pride.

We need scarcely say that such a distinction as this is one which cannot stand in argument for a moment, even on the assumption of the parties themselves, who seem, if not formally to avow, yet tacitly to act upon it. Be it will, or conscience, in the recusant—the whim of an hour or the conviction of his life—he is still equally entitled to forbearance and freedom in following it out; for who has given to the persecutor a right to lord it over the will, more than over the conscience, of his dependents? But we advert to this topic for the purpose of illustration; and, returning to our subject, we repeat the remark, that very much of the perplexity of politicians, in dealing with religion, arises from their incredulity as to the existence and power of the religious spirit generally, and more particularly, from their fixed persuasion, that in religious communities, at least, if not in individuals, it is a stubborn contest for power, not the stern force of principle, whether right or wrong, that raises all the difficulty. It is always dangerous, in the field of moral warfare, to assume, or to proceed upon the assumption of, the adversary's insincerity; it is like miscalculating and underestimating an enemy's strength on the eve of a general engagement. The coarse maxim, that "every man has his price," was a blunder, even in an age of moral and spiritual collapse. It is doubly a blunder now, when an earnest awakening has taken place. To respect, not indeed

the creed, but the conscientiousness, of the fanatic, has become a point of politeness with the man of the world, and of necessary wisdom with the man of affairs; and, as an individual believer, the Christian may, for the most part, reckon on his private opinion being held sacred. But a Church—a collective body or community of Christians—is another matter; its organization, as well as its origin, is understood to be, in a great degree, artificial and conventional, and as such, may be reasonably expected or required to be more flexible and pliable than the convictions of a man's own mind, over which even he himself has no direct control. Hence, while individual belief is to be admitted as confessedly a fixed quantity into the reckoning of statesmen, or as an irreducible element, incapable of being worked out of the equation, which, therefore, must have allowance made for it,—no such necessity is felt or acknowledged in reference to Churches in their collective capacity. These, on the contrary, are viewed very much as clubs, or affiliated societies, which may become the instruments of civil authority, or its rivals; but which, in either case, are to be treated as mere priestly or popular institutions, having nothing in or about them that should exempt them from the application of the ordinary rules of expediency, by which political men would contrive to balance and govern all things.

What an entirely new turn, for instance, would be given to our national counsels, were it once really perceived that the Church-ideal, so to speak, or the Church-exemplar—the notion, that is, of a Church and of its functions—is no human invention, but a part of the purpose and revelation of God; nay, were it only seen that this is the honest impression of Christians, and that possibly it may be correct! It is a great step gained when statesmen, though not themselves religious, believe in the reality and power of the religious spirit in others; the worst follies and crimes of the misgoverned world have arisen from the want of this belief. It is not that we insist on rulers having faith themselves; all we ask is that they shall have faith in the fact of their people's faith. Massacres and murders, as well as proscriptions and disruptions, might have been avoided, had men in power been wise enough to believe that men out of power could believe; or, in other words, that their convictions might possibly be strong and earnest. And so of the Church—let statesmen make of it what they may—they must lay their account with having something more than a mere strife of opposing wills to manage. For it is high time they should know, that, however Christians may be divided among themselves, as to what the Church is, they all, or nearly all, hold it to be a divine ordinance. Let its government be Prelatic, Presbyterian, or Congregational—and be its ministry hereditary, patronate, or elective—still, the almost universal impres-

sion among religious men is, that a visible church-fellowship and order is the result, not of voluntary association, but of divine appointment. And the sooner our rulers become thoroughly aware that they have this element to deal with, the better for themselves and the country.

But it is time to leave these generalities and come to the practical and urgent questions of our present political and ecclesiastical controversy which have suggested them.

The endowment of the Church of Rome in Ireland, for which the way is now prepared, is both advocated and opposed on grounds, which almost equally tend to open up inquiries of a far wider application. It is true, the measure, whether as originally planned by Pitt, or as now revived by those who use, or abuse, his name, has always hitherto been suggested in the character of a special expedient, fitted to meet a special exigency. Its advocates have usually sought to avoid the raising of any general topics of discussion, relative to endowments or establishments, and have rested their case on special pleadings respecting the peculiar state of Ireland. We have mentioned Mr. Pitt, as the first author of this plan; and we may be allowed to remark that in his time, and in the circumstances in which he proposed it, it was easier to give it the aspect we have indicated, than it can possibly be now. On this subject, we have been struck with the elaborate attempt recently made in the pages of the *Quarterly Review*, to turn the authority of that great name to account; and we have been led to ask ourselves if it be indeed so very clear, as our contemporary takes it for granted it is, that his oracle would have given forth the same utterance now, as in the days of the Irish Union? The matter may not be very important; but it is worth a moment's notice. We shall first give the substance of the reviewer's statement, and then offer an observation or two in regard to it.

"We can well understand the feelings and conduct of secluded students, who have studied everything but the history of their own times—of Protestant divines especially, who have never been in any way mixed up in the practical politics and political associations of the last half century. The *standum super vias antiquas* of these gentlemen we understand: but can we, without a smile of wonder, see the most distinguished members of the *Pitt* Club, and the loudest professors of *Pitt* principles, resting their claims to consistency on an opposition to Mr. Pitt's policy and pledges—not, like Reform, the hasty impulse of his inexperience—but the sober, deliberate, and reiterated opinions of his later life? They claim to be the exclusive heirs and representatives, as it were, of Mr. Pitt; and, as sometimes happens in private life, they are very angry with the executors for their readiness to pay the *legacies of the testator;* for assuredly no metaphor ever approached more nearly to literal accuracy than the description of '*Emancipation*,'

'*Maynooth College*,' and a '*State provision for the Roman Catholic clergy of Ireland*,' as the *legacies* of Mr. Pitt to his country: and wise or unfortunate, prudent or improvident, as these legacies may be deemed by different judgments—they *must be paid*. A large portion has been, after a long and irritating litigation, already discharged. It is now, we think, obvious that the rest, in spite of a litigation as active perhaps, but we trust not to be protracted to the ultimate ruin of the *estate*, must follow; and the adverse litigation cannot be with much grace or consistency maintained by those who profess a peculiar reverence for the memory of *Mr. Pitt*. In addition to what every body—except the Pitt Club—knows of Mr. Pitt's proceedings in these matters, new evidence has been just now produced, such as, when calmly considered, must have a great weight with every one who reverences the memory of Pitt.

"Mr. Maurice Fitzgerald, the Knight of Kerry, now we believe the only survivor, besides the Duke of Wellington, of those who professed Mr. Pitt's politics in the Irish Parliament, has, in his 'Letter to Sir Robert Peel,' very opportunely given his testimony as to Mr. Pitt's views and pledges, and his advice as to their accomplishment. The following extracts will not, we are sure, be thought too long by any reader:—

* * * 'I hear you bitterly assailed for having, as it is said, commenced a series of conciliatory measures towards the Roman Catholics of Ireland. The only practical crime of which you at present stand convicted, is your having pertinaciously urged through the House of Commons an increase of a few thousand pounds for the more cleanly and decent education of Roman Catholic priests. I would wish to dismiss here the really insignificant subject of Maynooth: that College was established on the suggestion of Mr. Burke, as a permanent institution, no doubt to be enlarged and improved according to the exigencies of the Roman Catholic Church. It formed but a small item in the catalogue of measures contemplated by Mr. Pitt for the amelioration of Ireland.

'Very grave gentlemen assure me that this is a first step in an awful revolutionary career. I will not, for a moment, doubt that many of my Conservative friends, and of the religious public, are actuated in their alarm upon this subject by the most sincere and honest views; but I cannot help asking myself whether these persons have ever heard or read of a measure called the Legislative Union between Great Britain and Ireland: if they have, they seem to have totally forgotten it. It is my misfortune to be old enough to have a very lively recollection of that event. I was elected to the Irish Parliament in 1795, a pupil in the school of Burke, and an humble but ardent supporter of the general policy of Mr. Pitt. I served long enough in the Parliament of College Green to be thoroughly disgusted with its political corruption, its narrow bigotry, and the exclusive spirit of monopoly with which it misgoverned Ireland. When the measure of a Union was announced to me with all due mystery, I was able to give an answer by return of post, expressing my great

gratification at the prospect, and only conditioning that the terms should be just and honourable for Ireland. My acquaintance with Lord Castlereagh, under a sympathy and perfect coincidence as to all the measures of Lord Cornwallis's government, ripened into the most cordial intimacy. Not only did I enjoy his personal confidence, but I was advanced rapidly, though then very young, over the heads of powerful political aspirants to the highest official departments under the Government; and I was, by this concurrence of circumstances, in the inmost confidence of Lord Cornwallis's counsels.

'The tenor of Mr. Pitt's speeches had clearly indicated a liberal policy towards the Roman Catholics: thence sprung the general *hostility* of the zealous *Protestants* to the Union. The same cause attracted to it the *good will* of the *Roman Catholics.* As the policy of the measure developed itself, those opposite feelings were more distinctly manifested. The compact and energetic resistance was composed of the more zealous Protestants of the North, a sturdy band of the old jobbers, and a remnant of the Whig opposition. Its supporters were all those whom the Government could influence, and such independent persons as duly estimated the enlightened policy of Mr. Pitt. We were backed up by the very general popularity of the measure among the *gentry of both persuasions, and the Roman Catholic population of Munster and Connaught.*

'When I look back to the general scheme of *practical relief* and enlightened concession towards the Roman Catholics, projected by Mr. Pitt at the period of the Union, and reflect that, after forty-five years of lamentable procrastination, your attempt to accomplish so mere a fraction of that scheme shall have excited such unexampled clamour, I do indeed stand amazed.

'Why, sir, if you are chargeable with an indifference to our institutions, and an intention of endangering Protestantism by endowing the Roman Catholic clergy, what must have been Mr. Pitt's case? Mr. Pitt, who had no such pressure from without to embarrass him as now affects your Government—Mr. Pitt, at the head of the strongest ministry that ever existed in England—supported by the great Whig aristocracy which passed over to him under the influence of Mr. Burke—with a powerless and unpopular opposition—Mr. Pitt deliberately and advisedly propounds a plan of which what you are said to have in hand is not a twentieth part. Why, sir, if your denouncers are right, Mr. Pitt must have been a traitor to his sovereign—his country—and his religion.

'From that elevation and security, contemplating the inherent distractions of Ireland, and well knowing the impossibility of remedying them through a mere domestic Parliament, he devised the noble expedient of elevating the smaller country by a comprehensive identification with England, including the total abolition of all civil and political disabilities founded on religious grounds. That such were his purposes I can testify. They were communicated to me most unreservedly by Lord Cornwallis. I hold in my hands a confidential letter from Lord Castlereagh, dated 22d June 1802, *recognizing the pledges given at*

the Union to the Roman Catholics of Ireland, for which they gave valuable consideration in their support of that measure (without which it could not have been carried), and further instructing me to endeavour to reconcile the heads of their hierarchy to *a delay in the performance of the engagements made to them by Mr. Pitt's ministry for the endowment of their Church.* Dr. Moylan, a justly venerated prelate, had then recently intimated to Lord Cornwallis the cheerful acquiescence of the Roman Catholic Bishops in the endowment of their Church.

'The extension of the Regium Donum to the Presbyterians had been just then obtained by Lord Castlereagh; but circumstances of a then very delicate nature, but now well understood, prevented Lord Castlereagh and Mr. Pitt from pressing the Catholic Claim: *I acted on the negotiation committed to me, and succeeded.*

'No man of the slightest political knowledge can doubt that, but for the King's illness and his necessary withdrawal from power, Mr. Pitt could immediately after the Union have carried through Parliament, with an overwhelming majority of both Houses, his measures for the complete political relief of the Roman Catholics and the endowment of their Church: and *to Mr. Pitt's intentions on that subject I personally testify on the authority of Lord Cornwallis.*'" * * *

It is no very material concern of ours to conjecture what Mr. Pitt might possibly have said and done now; but we cannot help thinking that he might have viewed the case differently had he been called to deal with such a crisis as the present. The measure, with him, was immediately connected with the carrying of the Union between Great Britain and Ireland, being designed mainly to facilitate the Union, and to smooth over the difficulties of his position in reference to that event; but whether he would have considered the passing of the measure now, after so long delay, and in the greatly altered circumstances of the country, as likely to accomplish all the beneficial effects he then anticipated, may at least be doubted. One thing, for example, is clear, that the religious scruples of the country were by no means so unequivocally against the measure then, as they are now. The emancipation of the Roman Catholics was the great subject of religious alarm, not their endowment. Even George III., it would seem, had no serious objection to the latter; as is proved by the reviewer himself:—

"In 1803 Lord Castlereagh was, as he stated, 'authorized under Lord Sidmouth's Administration to communicate to the Catholic clergy that it was in contemplation of the Government to make a proposition for a pecuniary provision on their behalf to Parliament: they stated in the most respectful and disinterested manner, that they could not, consistently with *duty and honour*, receive such a mark of grace and favour at that moment.'"—*Hansard, 29th March* 1821.

"We know nothing of the circumstances of this offer and refusal, which were only mentioned incidentally by Lord Castlereagh in his

speech on Mr. Croker's motion for a provision for the Roman Catholic clergy in 1821; but there can be little doubt that it was declined 'from honour and duty,' because it was not accompanied by a prospect of lay emancipation. We know, however, Lord Sidmouth's own personal opinion on the subject:—

'He was clearly in favour of a provision for such of the priests as would accept it; and he thought that there was a time when they would have received it *from him* (alluding, no doubt, to Lord Castlereagh's negotiation in 1803.) He considered that it would effectually *bind them over to keep the peace*, and prove themselves faithful subjects; and so far from thinking that it would be an encouragement to Popery, he argued that it would be only placing them on a footing with the dissenting ministers of Ireland who accepted the Regium Donum, and could not possibly be regarded as a recognition of Popery in a religious point of view.'

"This is a most important fact—that Mr. Addington's Administration, which held office solely by its concurrence in George III.'s resistance to what was called Emancipation, and in which *Mr. Percival* was at this period *Attorney-General*, should have been willing—as his Majesty must also have been—to pay the Irish Catholic clergy."

It is to be remembered, also, that the entire question of endowments, as well as of the relation between Church and State, has assumed a new aspect since that era. The pensioning or salarying of the priests might then have been carried as an isolated measure, without suggesting so extensively troublesome doubts and difficulties respecting all Establishments together. The English and Scottish Churches were by no means so precariously situated then, as now; and it is at least conceivable that so sagacious a mind as Mr. Pitt's, might have hesitated about reviving, after so long a slumber, and amid such combustible materials, an element so dangerous; and might have fallen upon other measures of practical reform for alleviating the grievances and conciliating the affections of Ireland. But, be this as it may, it is, at all events, very evident that the advocacy of the measure now, does, in point of fact, agitate more general topics of delicate and critical debate, than it was likely to do when it formed a part of Mr. Pitt's scheme of Irish policy.

Of the various considerations brought forward by the reviewer in support of the anticipated Roman Catholic endowment, there are two which it is worth while to single out, as illustrating the principles applicable to all Churches, which politicians are prepared to act upon and to avow.

The first of these very completely abolishes the conscience of the State, in the matter of endowments; the second is for debauching the conscience of the Church.

As to the first, the reasoning is very explicit:—

"Will any Protestant deny in the abstract that it is the duty of the

State to provide for the religious and moral guidance of so large a body of its subjects? We might wish—if visionary wishes were worth indulging—that we could supply it for all from the one pure fountain of our own sanctuary—that the Hindoos and Mahomedans of our Eastern world were Christians—that there were no Presbyterians in Scotland, and no Roman Catholics in Ireland, Malta, and Canada—that the British empire, in short, were a religious Utopia: but it is not so, and cannot be made so; and it is our destiny and our duty to deal with a different state of things, and to employ the means in our hands for purposes within our reach. But it is said that the guides that we propose to pay, entertain and teach certain doctrinal errors which the State should on the contrary discountenance. We will not enter upon these doctrinal points, on which seven-eighths of Christendom would be against us;—but we ask again, are any other guides possible? Have we even the extreme alternative of '*these or none?*' We have not. *These* we have, and *these we must continue to have;* and surely the lower any one may rate the actual fitness of these inevitable functionaries for their important duties, the stronger should be the desire to see them elevated in the scale of intelligence and respectability. The Duke of Cambridge in the Maynooth debate put the case in a short and cogent form—' If you want good scholars, you must have good teachers.'"

Clearly then, the nation that endows is to have no conscience, or sense of difference between truth and error. Nor is it less clear that the parties accepting the endowment are expected soon to have no conscience either. Thus, in dealing with the objection arising out of the alleged aversion of the Irish priests to accept of an endowment, the reviewer mainly relies on the witty and worldly argument of the late canon of St. Paul's, (Sydney Smith) which, but for his excellent fooling, would be really nothing more or less than an unblushing avowal of a design to make men relinquish what they deem real scruples of conscience, by a sordid appeal, not to their reason, but to their pockets. The somewhat profane levity of the reverend jester, our contemporary quotes with marked complacency, characterizing it as "arising from a shrewd estimate of human nature in general." And, indeed, his great plea is, that the sum required will be comparatively trifling; and that it will go far in the way of

"Hush-money, Mr. O'Connell may call it. And if it were hush-money, would it not be well applied?—but in fact it is in no other sense hush-money than that the diffusion of liberal education and personal comfort may naturally be expected to explain misunderstandings—assuage animosities—promote mutual charity, and tend to the peace and prosperity of our common country."

"Liberal education and *personal comfort!*" It is decent to combine the two; but it is manifestly on the influence of the latter that the reviewer lays his chief stress. His whole reason-

ing we repeat, is founded on the appeal to the pocket. See, he says to the British public, how little this scheme will cost you —less than *the auction duty*—only half what it cost you to abolish slavery; and if you doubt how far your friends in the Irish priesthood may think it right or lawful to accept your boon, trust, he slily adds, to "a shrewd estimate of human nature," and the effect of "personal comfort." Scruple or not, with or without conscience, rely on their clutching the bribe, sooner or later, and being all the quieter for it.

"Our first observation is, that the celibacy of the Roman Catholic clergy makes so essential a difference between them and the Protestant clergy in domestic expense, * * and that Lord Francis's scale *ought* to be quite satisfactory.* It is very nearly twice as much as is allowed to the Roman Catholic hierarchy of France. * * * We should wish, however, to see some slight amendments on his scale: for instance, some distinction might be made in the incomes of the archbishops of Armagh and Dublin—for the first, on account of his primacy; for the latter, of the more expensive residence in the capital; and so we think the bishops of Cork and Down—the latter residing in Belfast—should have something more than the bishops of less expensive dioceses. In one report of Lord Francis's speech his estimate for deaneries is stated at £400, and in another at £300; we should adopt these sums as the extremes, and allot them to two classes of deans. With regard to the parish priests and curates, we see that the actual number exceeds by about 150 his calculation: that would make an addition of from £10,000 to £15,000.

"These additions would perhaps be covered by his Lordship's original estimate of £250,000: but suppose that the whole expense were to amount in round numbers to £300,000, it falls short by a fourth of £400,000, the sum proposed by Sydney Smith, who probably had not looked accurately at the numbers; and we are satisfied that Mr. Goulburn would still say, in 1846 as he did in 1825, that, '*if the measure could be shown to be a beneficial one*, the sum itself was not of sufficient importance to impede it.' It is curious and not unimportant to observe, that even the extreme sum of £300,000 is exactly the amount remitted this session in the *Auction Duty!* and we may add that the value, even at the present high prices, of the annuity of £300,000 would be ten millions—half the amount that we were willing to pay for effecting the slave emancipation of our West

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* The scale proposed was as follows:—

4	Archbishops, at £1500 each, ...	£6,000
22	Bishops, at £1000 each, ...	22,000
30	Deans, at £300 each, ...	9,000
2000	Priests, at £60, £120, and £200 each, . .	196,000
		£233,000

In different reports of Lord Francis's speech, there are discrepancies in the items, but he stated the total amount at a round sum of £250,000.

India islands. We presume we need not insult the feelings and understandings of the country with one word more on the objection of finance—Oh, what an economical and profitable *expense* that would be!

"But suppose it passed—wouldt he priesthood accept it? We believe they would—*and immediately*—if presented to them, as we trust it would be, in a way not to compromise in any degree either their personal independence or their religious liberty. The State of course would be entitled, and indeed bound, to demand sufficient securities for the fitness of the person, and the due execution of the duty, such as the Roman Catholics of Ireland have already offered, and such as the Church of Rome concedes to all other—even Protestant—sovereigns. The Government can desire no unworthy influence over the Roman Catholic clergy, but on the other hand it cannot submit that the Crown of England should be treated with a less respectful and honourable confidence than other Protestant States. As the Government would probably make no new demand whatsoever, and be content with such regulations as are already conceded to other powers, these and such like mere points of business might, we presume, be arranged without creating scruples in any sincere mind. But we doubt whether it would be expedient to embarrass the individual members of the Roman Catholic Hierarchy by asking their *previous assent* to the arrangement;—it should be treated, not as a matter of negotiation between parties, but as the authoritative execution of a great administrative duty on the part of the Government—a provision which the parties might *take or leave* as they should think proper. The best way perhaps would be to grant the sum in general terms, on certain general conditions, to such of the clergy as should be entitled and willing to accept it, with perhaps the specification of the classes of clergy—archbishops, bishops, deans, priests, and curates—to whom it was to apply, and fixing the maximum and minimum of each class; but in all other respects leaving the details to be adjusted by Her Majesty or the Lord-Lieutenant in council;—but with two provisos—that any increase of the numbers should be defrayed out of the original sum by a proportionable deduction from the class in which the increase is made;—and that in case any individual clergyman should at any time decline to receive the allotted stipend, the same should be paid to the fund of Charitable Bequests, and employed either towards a *specific* endowment for the particular diocese or parish filled by the person so declining, or for general purposes, as might be thought most expedient—permitting always the party to withdraw his refusal, and to receive the stipend for the current, and, if due, one antecedent year."

Thus all is cut and dry; the salaries and stipends are all duly calculated; the exact gradation—from his grace the "primate," down through the deans, vibrating between £300 and £400, to the poor priest or curate "passing rich" upon his £60—is adjusted to a nicety: "personal independence and religious liberty" are secured,—the very idea of the State attaching conditions, or

desiring "an unworthy influence," being repudiated with indignation,—(are they to have what was declared to be intolerable in Scotland, state-pay without state-control?)—and the giving in of scrupulous and squeamish consciences, with an eye to "personal comfort," is anticipated from year to year. All is conceded, save "the Crown and Great Seal" to the Laity, and seats in the House of Lords to the Bishops. And yet even as to this last reservation, there is an "if"—which is, as usual, "a great peace-maker;" and for the sake of that perfect equality between Anglicans and Romanists in Ireland, which is to be the panacea for all its disorders, the reviewer would almost relent in favour of the excluded Prelates, could they but consent to make some slight concessions, as to patronage and the Queen's supremacy, (p. 294.) He has the entire scheme in his eye; and almost sees, in bright perspective, the whole Irish priesthood tamed, and Dr. M'Hale kissing hands at Court, on the issuing of a Royal *congé d' élire* in his favour, and a call to don his ample sleeves of lawn among the Princes and Peers of England.

Such is Conservatism; and such the friendly and equal alliance it would make between the two Episcopal and sister Churches. For "depend upon it," says our Sir Oracle—and "when he opes his mouth, let no dog bark"—

> "Depend upon it, that this is, to the Romish and the Protestant Church, a *common cause*. Establishments strengthen establishments; endowment supports endowment; and we are firmly convinced that the most protective laws which the most favouring legislature could devise to guard the Protestant Church in Ireland, would be weak and ineffective in comparison with such a recognition and establishment of the Roman Church as we advocate. As surely as we may confide in the scriptural axiom that 'wisdom is a defence and money is a defence,' so surely will this joint application of money and wisdom be a defence to the Established Church."

But if equality be the order of the day, there are two ways of getting at it. The Conservative reviewer has one scheme; a Liberal Churchman has proposed another.

The Hon. and Rev. Baptist Noel stands very much alone, we fear, in the Established Church of England; and it seems to be too generally the understood rule among many of his brethren to represent any opinion of his verging towards liberal views as an anomaly and extravagance, which sound churchmanship will scarcely condescend to answer. It is not our province to vindicate the position of that distinguished man; nor need we say that he always reasons or acts with perfect consistency. In the pamphlet before us, we have noticed a few inaccuracies of reasoning, which are comparatively unimportant; but the noble

and generous strain of the whole is beyond all praise. Mr. Noel writes with a hearty and fearless honesty of purpose, which exposes him to the captious cavils of small critics, but which, in our opinion, would be ill exchanged for more measured and timid caution. He is no admirer of Popery; in one passage of surpassing eloquence, he denounces its spiritual usurpations and social corruptions and crimes. He is no soft and gentle opponent of the scheme for endowing it; he threatens action in right good earnest, and with a vehemence that might startle the mild apologists of Rome in the British Cabinet and Senate. But, on the other hand, he deals in no indiscriminate abuse of the Premier, for the difficulties of whose position he makes full and frank allowance; and so far from harbouring any bitterness or jealous suspicion in reference to the Roman Catholic population of Ireland, his whole heart overflows with sympathy. We shall take an extract or two, from the first part of his letter to the Bishop of Cashel, as an illustration of his spirit.

After enumerating the penal statutes against the Roman Catholics, now happily repealed, but repealed too late for Britain's honour and Ireland's peace, he thus proceeds to speak of the Maynooth endowment:—

"For myself, could I overcome my religious objections to it, I should heartily rejoice in this grant as the pledge given by a Conservative Government that they mean to legislate for the Catholics in a just and liberal spirit. Than this, nothing can be more necessary for the peace of the empire. And for leading the great Conservative party to a sense of this duty, Sir Robert Peel deserves the thanks of his country. Let us not blind our eyes to the difficulties of the Government. Noble as the task may be which is committed to their sagacity and firmness, it is yet most arduous. To conciliate millions embittered by long years of mis-rule, to obliterate the memory of wrongs which have made the very name of Saxon England odious to them, to conquer by kindness those who hate us, and to make those who now impatiently endure their connexion with us as a hateful yoke, identify it with their freedom, esteem it to be their glory, and associate it with all their aspirations after national greatness and prosperity, is no easy task: and if Sir Robert Peel has made an attempt to fulfil this great duty, religious men, ought, as I think, to applaud the design, and support with ready zeal every well-principled measure which may lead to its accomplishment. The importance of this design, felt by statesmen of every party, has carried the Maynooth Bill through Parliament by such large majorities. Nor should we, who have opposed this measure, speak with unmixed severity of the votes even of religious men in its favour. I believe that they have greatly erred; and they chiefly are responsible to God, for a grant in support of doctrines totally opposed to the gospel of Christ, because their unanimous opposition would probably have been fatal to it. But they were under

great temptations; not merely those arising from personal and party considerations, but those which rested upon much more generous feelings. If they refused to conciliate the Catholics, they might become responsible for all the horrors of a furious civil war: and not seeing how otherwise to avert this great catastrophe, they have forced themselves to begin a conciliatory policy by affording an improved education to the priests. However strong may be the feelings which we entertain against this measure, we ought to do justice both to those who are its objects, and to those who have carried it." * * * *

And again, adverting to what some are apt to maintain, as to the Irish Roman Catholics being incapable of conciliation, he thus states and meets the objection:—

"This, indeed, is by some persons of heated imagination declared to be impossible. According to them, both priests and people are bent on Popish ascendancy, to which they are bound by ancestral recollections, by the doctrines of their Church, by the exhortations of their clergy, and by their own settled hatred of England and of Protestantism. Nothing, as these gentlemen think, will satisfy them but 'Ireland for the Irish.' The ultimate meaning of which is a separate kingdom, a Papal monarch, a Papal parliament, a Papal establishment, and a Papal people, from among whom, every Protestant landlord, minister, and peasant, shall have vanished by expatriation or by massacre.

"Now, my Lord, I profoundly disbelieve it all. Men cannot divest themselves of human nature; and, though Catholicism may be exclusive and cruel, and Catholic priests might wish to re-enact the Inquisition, the Catholic people are still like ourselves. They know well that such designs would be unjust to us, and therefore fatal to themselves; and the spirit of Papal Europe would condemn them. Papal France, instead of exterminating the Protestants, has given them equal privileges with the Catholics; Belgium, more intensely Catholic, has imitated the liberal example; and the same tendencies are discernible in the Catholic populations both of Italy and Spain. While, therefore, the Irish Catholics ask for nothing but legal equality with Protestants, the Government is bound to believe them sincere in assigning these limits to their desire, till they see proofs of the contrary; and not refuse concession to their fair demands, because some persons, who fancy that they have more penetration than their neighbours, impute to them concealed designs of violence and plunder. I believe these designs not to exist, because they are disavowed by upright and honourable men; because they would be no less foolish than wicked; and because there is no evidence for them. But should they ever come into existence, this country, with clear justice on its side, would, with the blessing of God, speedily extinguish them."

In this large and truly catholic temper of mind, does Mr. Noel go on, first to discuss the principle of an indiscriminate endowment of all sects, and secondly, to set forth and defend at large his own plan for conciliating Ireland.

As to the first, he speaks plainly and strongly :—

The doctrine "appears to make the principle of legislation on religious subjects completely infidel. According to it, religious men in Parliament are not entitled to ask whether any doctrine which claims parliamentary support is true or false, useful or mischievous, honourable to God or offensive to Him; but if the support be required by a body of tax-payers, or if it be demanded by an apparent political expediency, then it must be granted, though it may be to falsehood, to superstition, or to ungodliness. If the present state of opinion renders it impossible to maintain the ministers of one Christian denomination exclusively, because other denominations esteem this to be unjust, then the State may, without breach of Christian principle, cease to maintain them, as in the United States; but to maintain the teachers of superstition or of infidelity together with those who preach the Gospel, is to despise the Gospel, and to degrade its ministers. If this is to be henceforth the dominant principle of legislation on religious subjects, every Christian ought to use his utmost efforts to rescue all religious questions from the hands of our legislators. If Parliament cannot legislate in favour of true religion, they are bound not to legislate against it: if they think it imprudent to support the truth alone, let them leave both truth and error unsupported: if Protestantism can only be cherished at the cost of patronizing Romanism, let both be left to themselves.

"This principle of paying all creeds is so irreligious, that no nation which is not generally irreligious can long endure it. On this account it seems probable that the maintenance of the Roman Catholic priests would seal the doom of the three Establishments in England, Scotland, and Ireland. Institutions are built on principles; and when the fundamental principle of an institution is generally abandoned, the institution itself must soon fall. Hitherto the Establishments of the United Kingdom have been upheld chiefly by the idea that a Christian legislature is bound to provide for the Christian instruction of the whole people; but that idea being exchanged for the notion that Parliament has nothing to do with theology, but must support the creed of the many, the Christian advocates of Establishments have no longer any principle to contend for. And should they resort to the lower considerations of expediency, as the only remaining method by which they can defend these Establishments, even these, like a battery carried by the enemy, are turned by the new doctrine against them; since it must be worse than useless to maintain a body of sound teachers for the nation, on the condition that a larger body of false teachers shall also be maintained, to defeat all their efforts. Already has the Maynooth Bill given the greatest shock to the Establishments of the United Kingdom which they have yet received; and should its principle lead further to the endowment of the Roman Catholic Church, they must shortly fall."

Then as to the second, he thus boldly announces, what he must have been well aware, would sound like an alarm-bell in the ears of his Episcopal brethren :—

"Must we then resign ourselves to eternal strife with our countrymen? * * Nothing of the sort. Let us remember, that what the Catholics ask is simply equality with Protestants; * * and who can say that their demand is unreasonable? Then if they may reasonably claim religious equality, and yet as Protestants we ought not to sanction their errors, the obvious course is, to give them equality some other way. If religious principle forbids that we should place the priests on an equality with Protestant ministers by voting for their public support, what principle forbids us to place them on that equality, by removing the obnoxious privileges of the Protestants?

"On all accounts the second course is to be preferred. If the Catholics must be conciliated, and only two methods of conciliation are proposed, the one, to pay teachers of all denominations, and the other, to pay none, can a Christian hesitate which to choose? Here I gratefully recall your own declaration to the House of Lords, 'that you would far prefer the putting away of all establishments, to the endowing of two or three religions.' In that sentiment, my Lord, I heartily concur; and as the Irish priests must be endowed, or the endowments of the Protestant Church be sacrificed, the time seems come when this sacrifice must be made;"—

—a sacrifice, as he proves at large, neither impracticable nor severe:—

"I do not conceal from myself that the result of this surrender might be a reduction in the numbers of the Protestant ministers, although their maintenance on their present footing, would only cost to the members of the Irish Church, who possess much of the wealth of the kingdom, £1 each per annum; but IT IS QUITE CLEAR THAT THIS REDUCTION MUST SOON TAKE PLACE, WHATEVER MEASURES MAY BE ADOPTED, AND WHATEVER PARTY MAY BE IN POWER. And if there might be fewer ministers, the reduced corps would be animated with loftier zeal, and endued with ampler powers of usefulness. Protestant gentlemen, possessed of four-fifths of the soil of Ireland, would not generally leave themselves and their tenants destitute of pastors; and if a small fraction of the English people can raise £300,000 per annum for missions to the heathen, England would not overlook the fair claims of our Protestant fellow subjects.

"Is it not far better, my Lord, that the ministers of the Irish Church should from this day themselves advocate that measure? * * Long has the Church been rendered incapable of efficient action, by the enmity with which State patronage has surrounded it: but should you now organize a missionary system for the whole island, and call your English brethren to your aid, so that the Gospel may be heard in every village, —not only in your churches, to which Catholics will not come, but wherever they may be gathered to listen,—the truths of the Gospel, unchecked in their influence by the bitterness which your possession of hated privileges has hitherto generated among the peasantry, may effect a religious change in Ireland, greater than it has yet experienced. Thus the Church may answer by its disestablishment the very end

for which it was established. For this, too, the grace of God appears to have been preparing you. The separation of the Church from the State fifty years ago would have left your country almost wholly to the priests; but now it would only animate hundreds of excellent men to proclaim Christ with more ardour to all the Catholics of Ireland.

"A century and a half has the cause of truth been losing ground under the influence of penal laws against Catholics, and splendid endowments of Protestants; and the ultimate result of a rich Establishment has been that the proportion of Protestants to Catholics is less at this day than in the reign of Queen Anne: but let the ministers of Christ go forth as Paul did, unclogged by the odium which loads a dominant and privileged minority, and you may see the warm hearts of the Irish welcoming the good news of salvation by grace through faith, without the aid of priests and masses, of saints in the other world, or images in this; and your unprivileged ministry working such moral wonders as bishops' lands, glebes, and tithes, never could enable it to accomplish."

That so bold a pamphlet as that of Mr. Noel's should call forth strong feelings, was to be anticipated; and, accordingly, we are not greatly surprised by the tone exhibited in a review of it, which has been republished from the "Irish Monthly Magazine for September 1845," in which it is vehemently denounced as "Mr. Noel's very mischievous letter," and "this ungenerous publication," but in which the reasoning of Mr. Noel is very feebly met. There is a poor ebullition of temper at the very outset, in which the author tries to be very smart, and succeeds only in showing that he is very sore:—

"Before we proceed to review the interior of this book, we have one observation to offer on its title page. The author gives his name as Baptist W. Noel, M.A. The Rev. Baptist Noel is well known to the religious public. Is this he? It is usual for clergymen, when they write books, and put their names to them, to prefix their title. One would suppose there was an additional reason for so doing, when they write on a subject connected with the Church. Was it because this pamphlet is directed *against* the Church, that Mr. Baptist Noel's modesty led him to conceal the fact of his being one of her own ministers? Or has he taken a more honest part, and resigned his office ere he took up his pen to write evil and poisonous words against her whom he had sworn to reverence and support?

"But, perhaps, this is another Baptist Noel. We would gladly hope so; for we thought better of him than we can of the writer of this letter."

The argument of Mr. Noel is then, with large display of logical precision, set forth and dealt with. We can afford room only for a question and a paragraph. The question is:

"* * * Does Mr. Baptist Noel seriously suppose, that because Popery, which he has represented as irrevocably bad, demands of the Government *to deprive Protestantism of its armour*, in order that the truth

may be laid naked for its attacks, it becomes an English clergyman to call upon the English people, for the sake of peace, to deprive the Protestants of Ireland of the means of grace which they possess?" * *

And the paragraph :—

" Were Mr Noel's premises unexceptionable, his conclusion would find an argument against it in the strong arm of the Protestants of Ireland, and in the bold assertion of their rights. He has failed to prove to the Protestant fathers of Ireland that their children ought to be deprived of the gospel blessings which they themselves possessed, or that they should yield them without a struggle to preserve them for their little ones. It is very well for this Englishman,—who, to judge from his pamphlet, knows just as much about the real character of the parties in Ireland as about the parties in the moon,—to say that the noise of the Irish agitators, which sounds unpleasant in the ears of this comfortable parson, and disturbs his peace of mind, must be silenced by throwing to them, as a sop, the rightful possessions of the peaceful Protestants; *but perhaps he will yet learn, that though they are peaceful, and patient, and enduring, they have inherited from their fathers hard hands, and stout hearts, and unflinching resolution, which may, if forced into action, ere long raise about his ears a louder and more unpleasant noise from Ireland than has yet distressed him.*"—Pp. 7, 8.

Our readers will observe, on the one hand, the tenacity with which, according to the above extract, the endowments of the Irish Church are to be clung to, as " the armour of Protestantism," and on the other hand, the readiness with which violence is to be resorted to for defending them. We doubt if any speech of O'Connell's ever breathed out fire and fury, or threatened the Orange faction with the vengeance of his " seven millions," so plainly as the paragraph which we have printed in italics hints at " hard hands and stout hearts forced into action," in a Church war. Alas for Ireland! that an appeal to the ultimate arguments of mere force should be the ever ready resort of all parties among her sons, and whether Repeal is to be won, or Church property is to be kept sacred, we should hear always of the noise of battle, as the menace that is to carry every thing! After this, with what grace does the writer complain of Mr. Noel's description, as applied to the " noisy" class of the advocates for Protestant ascendency!—as in the following passage:

" He (Mr. Noel) next proceeds to *justify* this conduct of the agitators. But first he seeks to disarm objectors :—

'Red-hot, sulphur-breath'd ascendency men, like those mentioned by Burke, who would have become Papists in order to oppress Protestants, if, being Protestants, it was not in their power to oppress Papists, may indeed contemplate the subjugation of the Catholic party by the bayonet, as the just punishment of helots who dare to threaten the prerogatives of their masters ; but you, my lord, have no such feelings.'—P. 3.

"A more objectionable passage than this could not by possibility have been written. It affixes at once upon the Protestants of Ireland, who claim protection from Parliament against the designs of the agitators, the stigma of being 'red-hot, sulphur-breath'd ascendency men.' Now we respectfully reply to Mr. Noel, that he could not have given a more false representation of their character—they are, and they have proved themselves to be patient and peaceful men, who ask for nothing more than protection and a preservation of their rights and property. But he may say he did not mean *them*. Who, then, did he mean, contrasting them, as he does, with the Repeal party? Though, no doubt, he wrote in ignorance, and did not intentionally falsify the Protestant party, ignorance on such a subject in one who writes, and knows that thousands will be guided by his pen, is something worse than wilful misrepresentation. But it is because the Irish Protestants are not what he represents them, it is because they have been too patient and too silent, that Mr. Noel has the power to speak of them as he does. He has learned their character from the speeches of the Conciliation Hall; and he adds the weight of his name to support the slanderous accusations which weekly emanate from that place. Let the Protestants of Ireland remember this, and give the English an opportunity of henceforth knowing them from their own lips and actions."—Pp. 9, 10.

We humbly think this "too patient and too silent" Protestant has given us "an opportunity from his own lips," of knowing what manner of spirit he, at least, is possessed of.

The cry of spoliation is, of course, raised, and the assertion that Church property is beyond the rightful control of Parliament, repeated and insisted on, with all the strenuousness of an old defender of the divine right of tithes, but with scarcely so good a case to maintain, as when the Church claimed tithes as her own, *jure divino*, independently, alike, of national authority and of private gift. It is the latter plea only that is now urged:

"He (Mr. Noel) proceeds to paint the horrors that must arise from the struggle, and concludes by saying:—

"That 'no one can reflect upon the loss of life . . . . . which such fratricidal struggles would occasion, without feeling that there is no sacrifice consistent with religion and morality which Great Britain should refuse to make, in order to avert such a catastrophe.'—P. 2.

"True; but it is *not* consistent with religion to sacrifice the establishment, nor with morality, for *Great Britain* to take their rightful property from the *Irish Protestants*. It is one of the commandments in the *Moral Law* that says, '*Thou shalt not steal.*' He says the 'people are inspired by religious enthusiasm, and many of them goaded by want.' Is it to supply their wants that he intends to employ the property of the Church? Is there no other fund that could be employed in charity than this? or are the English to pick *our* pockets that *they* may have the credit of feeding the hungry? Or is it to gratify the religious enthusiasm of the Romanist, that Mr. Bap-

tist Noel would sacrifice the Church? Truly this would be a worthy motive coming from such a quarter!"

And again:

"We shall now proceed to notice some further misstatements of a very gross nature contained in this pamphlet.

'Still the Church of the minority, established by law, is maintained under an armed compulsion by the toil of Catholics.'—P. 10.

"This assertion is altogether untrue. It is untrue that the Church is maintained 'by the toil of Catholics' (Romanists). * * The clergy are not paid by any man's toil. In truth they never were. When their income was derived from tithes it was an injustice to none, for they had a possessory right over this property as an inheritance descending to them from times immemorial, long previous to the date from which any landlord or tenant could trace his tenure of the soil. Properties were purchased, and leases were made with this reservation. And if the people at any time desired to retain the tithes in their own pockets, this was nothing more or less than 'coveting their neighbour's goods,' or if they did retain it, it was 'stealing them.' * * * The Church is now maintained by a *rent-charge* upon the land, a distinct possession, which neither prevents improvement nor burdens any one. The landlord, be he Protestant or Romanist, will not be so dishonest as to desire to lay hold on property which never, in any form, belonged to him, nor will he feel that his conscience is polluted by being made the instrument of handing his rightful possession to a quiet clergyman, especially when he remembers that he is paid twenty-five per cent. for the trouble. * *

"Having stated the gross income of the Irish Church as amounting to about £550,000; and that out of this sum 1638 archbishops, bishops, dignitaries, and incumbents, are supported; he proceeds to an assertion which shows complete ignorance of the history of the Irish Church. * * * The false statement to which we allude is as follows:—

'This body of clergymen is maintained by tithes and glebe, or other church lands, which have been transferred by the State from Catholics to Protestants, and which, if it should at any time be found that their application to the maintenance of Protestant ministers was detrimental to the progress of religion, might be sold, at the death of those possessing life interests in them, for objects of general utility both to Catholics and Protestants. This property is, therefore, national property.'—P. 37.

"This doctrine is not now stated for the first time, although it sounds new as coming from the pen of a clergyman of the Church. It has been frequently contradicted and disproved; we shall not here enter into the controversy, further than to state a few *undisputed* historical facts, which we would advise Mr. Noel to keep before his mind when next he takes up his pen against the Church. The Church previous to the Reformation, possessed large property, not the 'endowment' of the State, but accumulated from time to time from the benefactions of individuals. It was, therefore, no further 'national property,' than

any man's estate, which is in a certain sense 'national,' and subject to the omnipotence of Parliament. At the time of the Reformation this property was not 'transferred by the State from Catholics to Protestants.' But the people, *and all the clergy, with scarcely a single exception in Ireland*, throwing off the usurped authority of Rome, and popish error, retained, as an old and inalienable right, the property which being theirs before they had reformed themselves, continued theirs after this reformation. * * It ought not to be lost sight of, that the State *never bestowed any property* upon the Church, though it has been ready enough at all times to strip it of its lawful inheritance. * * At the Reformation, the Church, and the Church property together, were separated from Rome by the will of the majority of the people." * *

Our readers may be sure we are not about to inflict on them a new discussion of the vexed question of Church property. Whatever obsolete dreams may still haunt the minds of Churchmen, statesmen of all shades of opinion are pretty much agreed in maintaining that, at the very least, there is some considerable difference between property belonging to individuals, and that which is in the hands of great public corporations, such as, in reference to this matter, the established Churches must be held to be; and that there is a corresponding difference in the measure of control which the State has over these two kinds of property respectively. Even property bequeathed to an individual is not exempt from the disposal of the supreme power of the State, in certain extreme cases, in which there may seem to be a necessity for interfering with the testator's will: and the more the bequest assumes the character of a public trust, the more clearly and unequivocally does it become subject to the discretion of the entire community and their rulers. The existence of this discretion is allowed by this writer; and its exercise is pleaded, (strangely enough, in bar of a repeated exercise of it now,) in the instance of the Reformation. But if the general body of the people could then alter the destination of property alleged to be bequeathed by private parties—for assuredly its destination was then changed, and it was made to belong to parties, and to be applied to purposes, very far indeed from the mind or intention of the original donors—if their wills, alleged to be executed generations before, could be then changed or set aside by the national will of the day—what stands equitably in the way of a still farther modification of these wills now? And if it be said that what may now be proposed, in the way of appropriating the Church revenues to other national objects, may imply a more sweeping alteration of the purposes of the testators, than what was then done, when they were merely transferred to the support of another mode of faith and worship—it is to be remembered, in the first place, that this does not touch the question of the right which the nation has

to interfere with the destination of funds thus left in public trust; and, secondly, that for anything that now appears, the pious founders of these said endowments, if they could be consulted on the subject, would all along have preferred, and now, more than ever, in the altered circumstances of the country, and with the rising prospects of Rome, would prefer, the allocation of their legacies for general purposes of utility, to what they might indignantly resent as a flagrant perversion of them, for the support of heresy and schism. For surely they left them as resources that they meant to make available for the permanent maintenance of Orthodox and Catholic truth, which, the more the people wished to change it for Protestant error, so much the more needed all the support which their benefactions were designed to give.

But it has always occurred to us that there is another answer to the plea set up in behalf of Church property, on the ground of its having been bequeathed by private parties, and not given by the State.

Granting this, and admitting, moreover, that in so far as a private bequest, even for public purposes, can be instructed to have been made to individuals, or to a corporation, it ought to be exempted from the disposal of Government and of the community—one thing, at least, is clear, that it rests with Government and the community alone to say, whether there shall be an Established Church at all, or not, in the land—whether the alliance between the State and any particular form of Christianity shall be kept up or dissolved. Let us suppose the country to be of opinion that there should be no Established Church in Ireland—no Church which the State, as such, should prefer to other communions, and invest with the character of a Church "by law established;"—let an Act of Parliament be passed, not touching endowments, or commuted tithes, or property of any kind, but simply to the effect that it is no longer expedient for the State to be in alliance with one Church more than with another; or, in other words, that the Protestant Episcopal Church shall cease to be the State Church, without any other body being substituted in its place, and without any thing being said as to its property. Then, let that Church plead legacies and bequests of private parties, as far as these will avail: for then the question would be fairly raised.

For, surely, whatever these old donors or testators could do with their property, in the way of leaving it to one particular Church and not to another, they never could bind the State to maintain in perpetuity an alliance with that, or with any Church. Private parties might themselves *endow* a Church; they never could bind the State to *establish* it.

We are aware that to some this may seem to be a distinction

without a difference, while others may regard it as a mere *reductio ad absurdum* by which the adversary is run up into a corner. Such persons may accuse us of a sort of quirk or quibble, and may tell us that the very reasoning we are combating is against the disestablishing of the Irish Church, on the express ground that such a course would imply the loss of its endowments. But be it so; that is no concern of ours in this argument. We are meeting the assertion that the vested right which that Church has in its temporalities is a bar to the State's dealing with the question of its continuance in the position of an established Church, and in the relation to the State which that position implies; and we say, whoever may have given the Church these temporalities, and by whatever charter of irrevocable or inalienable bequest, no private party could bind the State to maintain an alliance with the Church, for the mere purpose of securing to it the possession of these alleged benefactions. There being an established Church in a country, an individual may leave money to it, under that style and character; but it would be rather too much to admit that he thereby forecloses the question—whether there shall be an establishment in that country or not—for all time coming. If the State in its discretion decide that there shall be no established Church any longer, the privat elegacy must take its chance; and if there be then no body entitled under the original deed or will to claim it, we presume it must revert to the crown as *ultima hæres*, and be treated as a part of the national wealth.

Holding it, therefore, to be in equity a perfectly open question, in what manner the State ought to deal with ecclesiastical prerogatives and ecclesiastical privileges in Ireland, we have three distinct proposals before us: the first, to continue to the Irish Church its civil privileges and temporal possessions, and conciliate the Roman Catholics by a liberal sop to their priesthood; the second, to give up the attempt to maintain a religious establishment in Ireland, on the ground of expediency and equity, and to avert the worse evil of an endowment of Romanism; and the third, to keep things as they are, in respect of Anglican ascendency and papal voluntaryism. There is yet a fourth—to transfer or divide the spoil—so that the Roman Catholic clergy may share the wealth of the Irish Church. But whatever a few years of agitation may do towards reconciling men to some such compromise between the extreme views of opposite parties, it is not at present a measure of much practical value or plausibility.

We have not space, in this article, to examine these several prescriptions minutely; nor was this our object in bringing them forward. Our anxiety rather is to make it palpable, and to proclaim it openly, in the first place, that the question of re-

ligious establishments is now fairly raised, not as regards Ireland only,—for we at once allow that the settlement of it must embrace the whole empire, since we have no idea of its being possible, as Mr. Noel seems to think, to confine it to Ireland,—and, secondly, that this question of religious establishments is now practically raised, in very different circumstances indeed, and on a very different footing, from those which marked the recent keen discussion of it within the last few years. When it arose, some short time ago, it was canvassed very much as a polemical controversy in theology: the abstract lawfulness of Establishments was the topic generally agitated; and the duty of nations and communities, in reference to religion, and the countenance to be given to it, formed the thread of not a little subtile and intricate argumentation. At that time, also, it seemed as if the defence of establishments had the advantage of many tendencies in all the existing Churches towards improvement and revival; so at least many of their defenders believed: in Scotland, the work of reform and of extension was going on; in England, evangelical piety seemed to be on the increase; and even in Ireland, when the Appropriation Clause was so strenuously resisted by a large portion of the religious public, it was under the impression that the Irish clergy were becoming really missionaries, and certainly without the least suspicion that the party whom their aid then enabled to defeat that measure, in opposition, would immediately on their return to power, exact, as the price of the preserved integrity of the Church's wealth, the endowment of Romanism out of the public funds. Now, all these things are changed. Not to speak of what has happened in Scotland to make even politicians of influence and ability less confident of the good working of the existing establishment than before,—is it not a deepening impression in the minds of all serious thinkers, that the resources of the English Church are now more and more aiding in the propagation of error instead of truth? And in regard to Ireland, what fair promises in the Episcopal Establishment have been blighted? and who would purchase the small infinitesimal portion of its endowments that actually goes to the support of a zealous and pure Christianity, at the cost of a large grant to the priests of Rome? Meanwhile, religious men and religious communities are forced, more and more, into positions of independence: and there is evidently rising a spirit which all the sordid policy of such shrewd judges of "human nature" as our Quarterly Reviewer, with Sydney Smith to back him, will not purchase or tame. We cannot but think that, in this crisis, a breathing time is allowed, if men would learn wisdom, ere the inevitable crash comes. Why should it alarm us, or seem formidable and re-

volutionary, to avow that the time has come, when it is a fair question whether the least of two evils may not be, the giving up of existing endowments? We must not enter into the question farther at present; but we cannot close without expressing our conviction, that if it were grappled with, in this time of peace, by statesmen and churchmen, seeking only a wise practical adjustment, it might be found to have much less of real connexion with the support of good government and sound religion, than many looking at it from a distance might suppose. That the nation and its rulers are bound to honour Christ, and maintain his cause, is a doctrine which even those of its advocates who had quitted an Establishment for conscience sake, may maintain with as much tenacity and strength of conviction as ever; but they may hold, at the same time, that the nation and its rulers would, on the whole, best discharge this duty, in present circumstances, by having no established Churches, in the common sense of that phrase at all. And as to the views of statesmen and politicians, it might be not unwise for them to consider, whether it may not be safer and better to have all the Churches of Christ unestablished alike, rather than to have the present plans of endowment made the instrument of corrupting the more pliant among them, and irritating justly the more conscientious and sincere.